

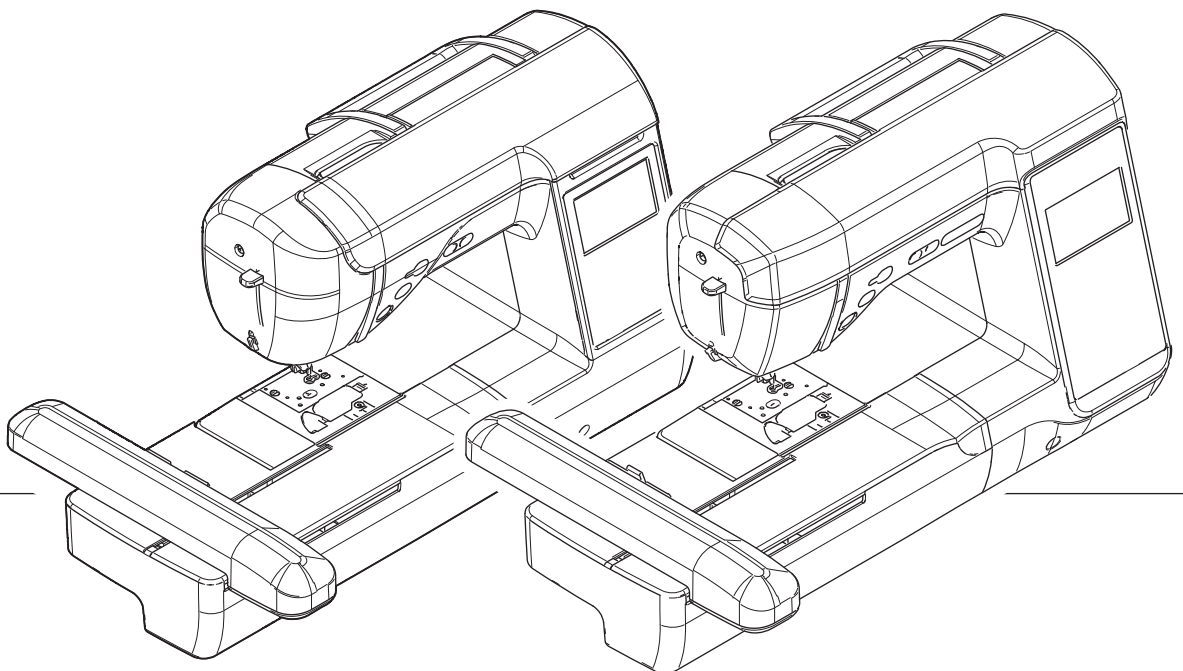


Home Embroidery Machine

SERVICE MANUAL

MODEL :

**NS1150E/F440E/PE830DL/PE810L
PE800/BE815L/NS1250E/F540E/PE900
PE910L/BE915L**



CONFIDENTIAL

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GENERAL INFORMATION

This service manual has been compiled for explaining repair procedures of this MODEL.

This was produced based on up-to-date product specifications at the time of issue, but there may have been changes of specifications for the purpose of improvements.

Contact manufacturer or local sales company for information concerning such changes.

Brother Industries, Ltd.
Nagoya, Japan

CAUTION <To do the adjustment and the repair safely and surely, follow the instructions below. >

1. Do the adjustment and the repair according to operation procedure of this service manual.
2. When you attach or remove parts, turn off a power switch and then pull out a power supply plug from outlet.
3. When you replace parts, use regular parts.
4. Do not remodel a sewing machine.
5. Always use earth band when handling printed circuit boards to exclude damage of printed circuit boards by static electricity.
6. Pack printed circuit boards in antistatic packaging and avoid subjecting them to any from of impact during storage or transportation.
7. Do not touch or damage the metal portion of a printed circuit board with a screwdriver or any other tool while making repairs or the like.
8. Insert removed connectors into the proper position according to special instructions of wiring for this service manual at the repair, the adjustment and replace printed circuit boards.
9. When you remove a connector from printed circuit boards, remove it while having a connector part.
(When you pull out a connector while having a lead wire part, there is a risk that a lead wire get broken.)
10. Do not damage lead wires, when you cut a band that bind up lead wires.

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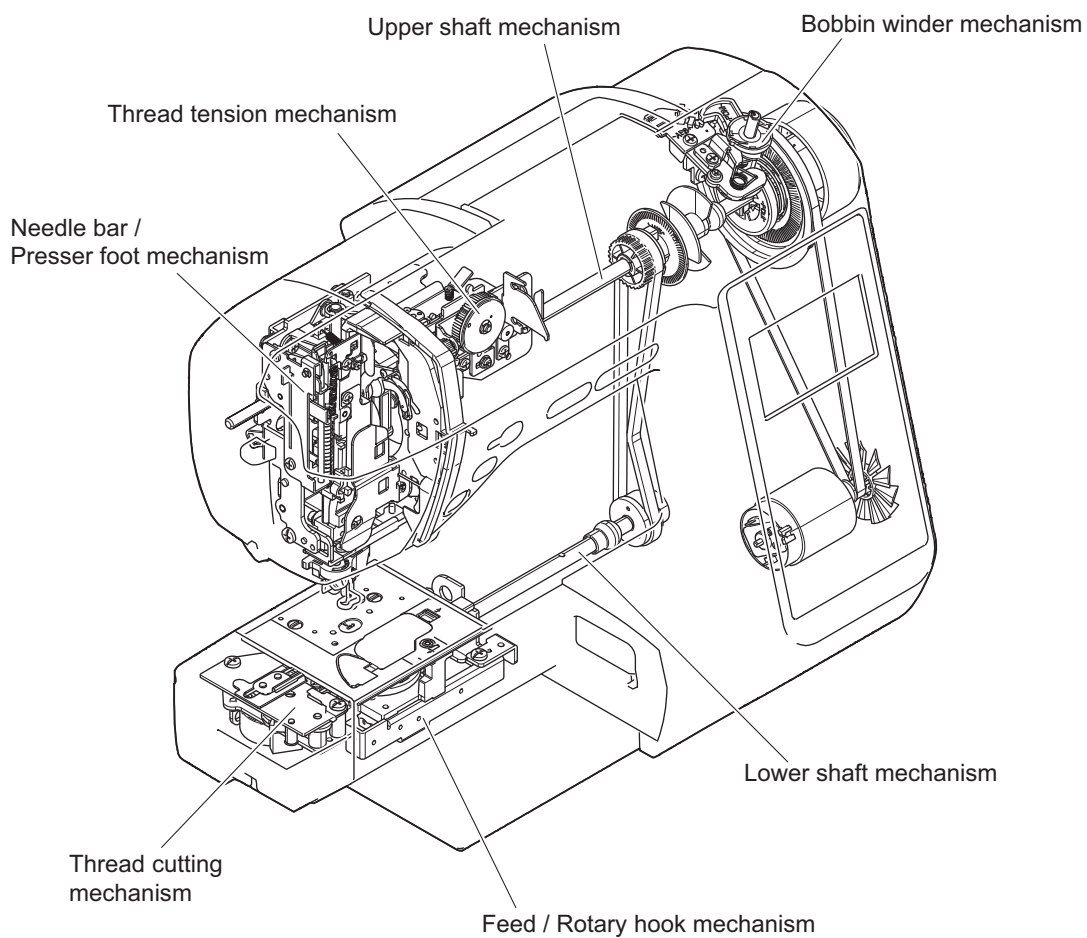
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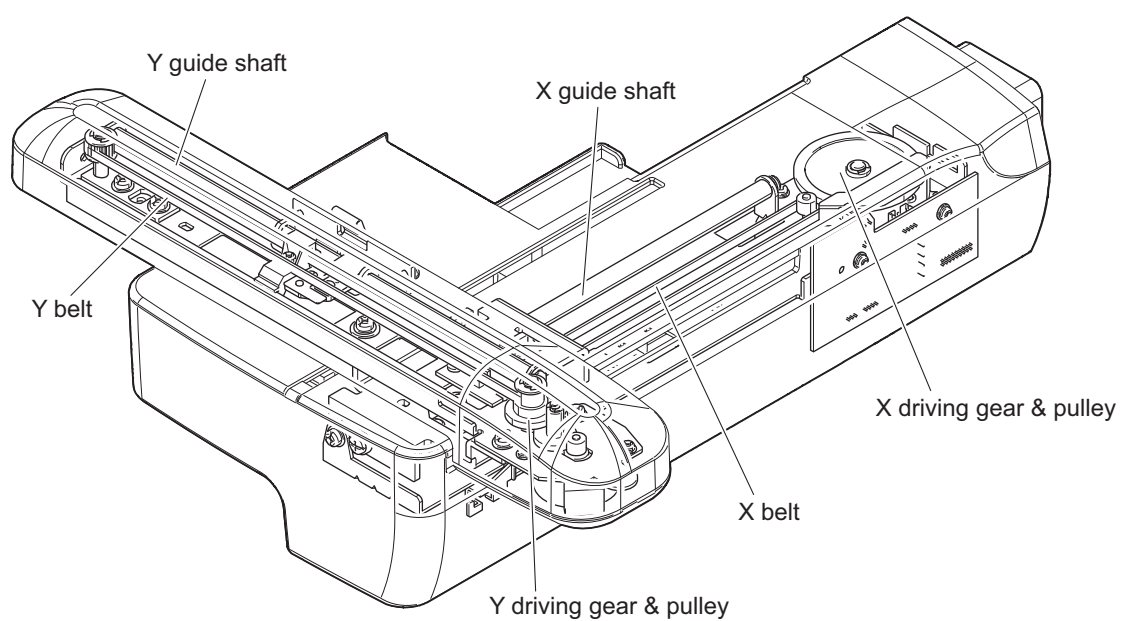
1 Outline of Mechanism

Main mechanisms	1 - 2
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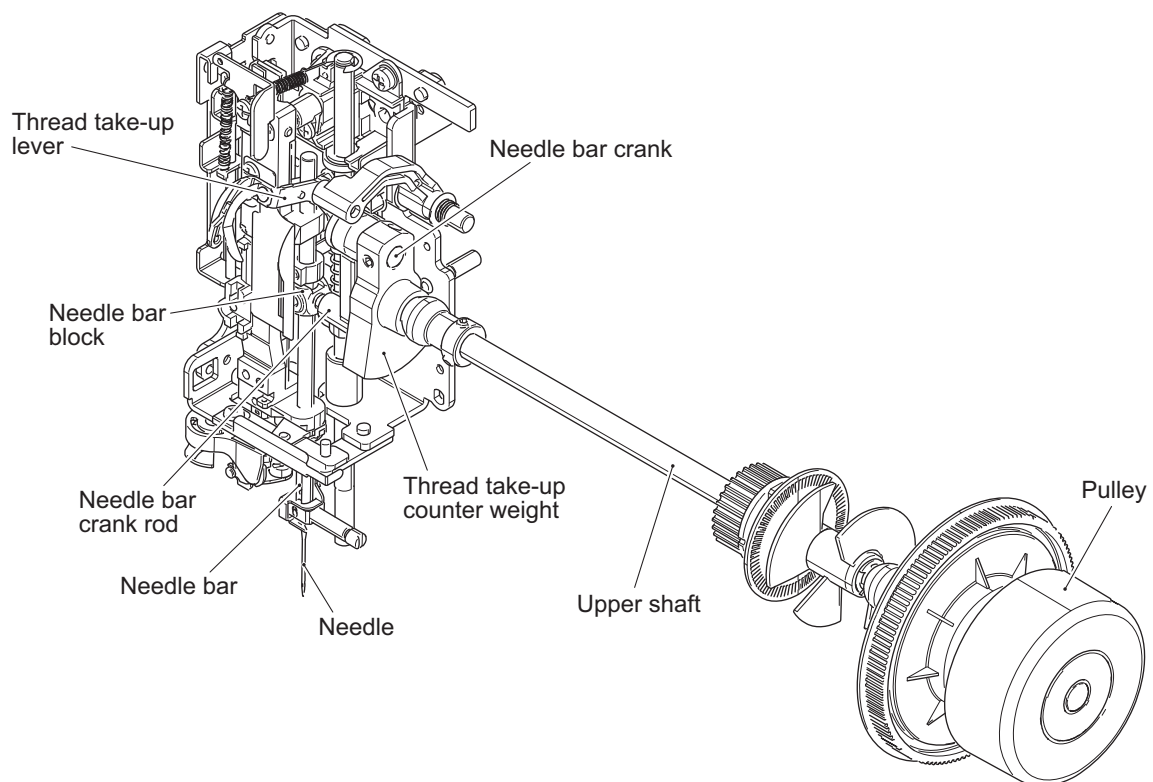
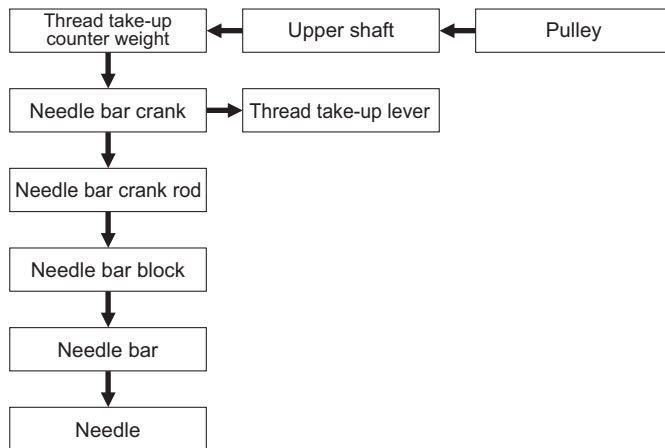
Main body



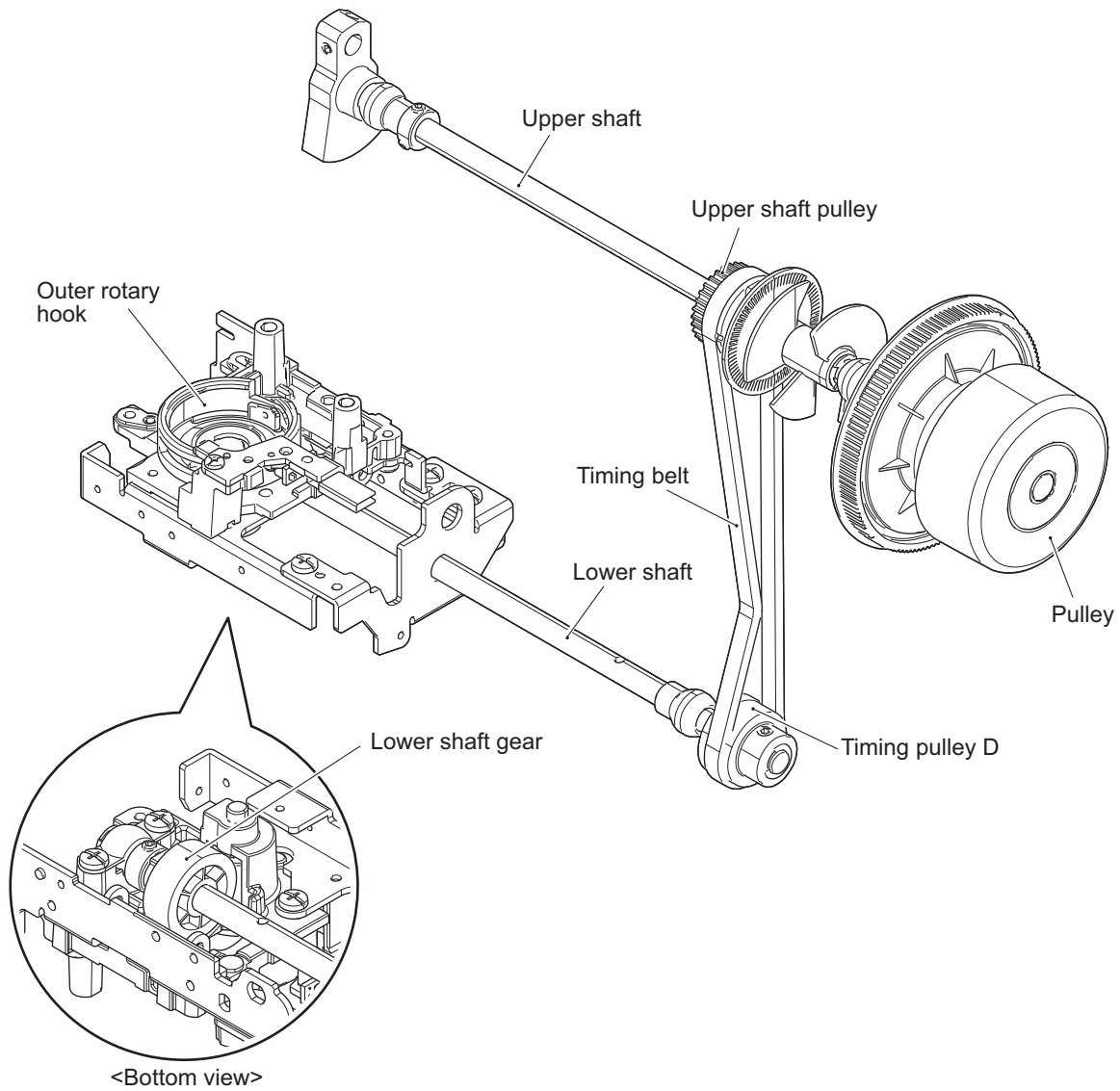
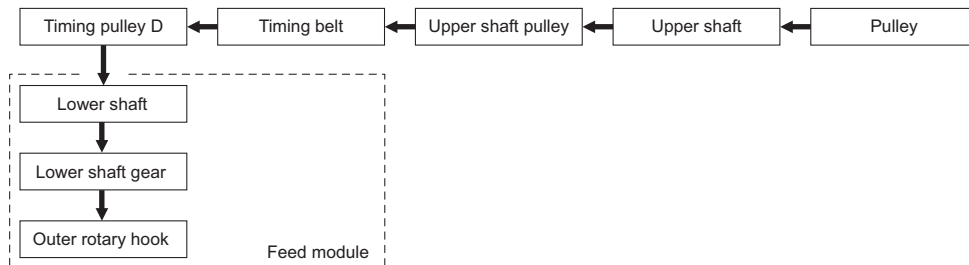
Embroidery unit



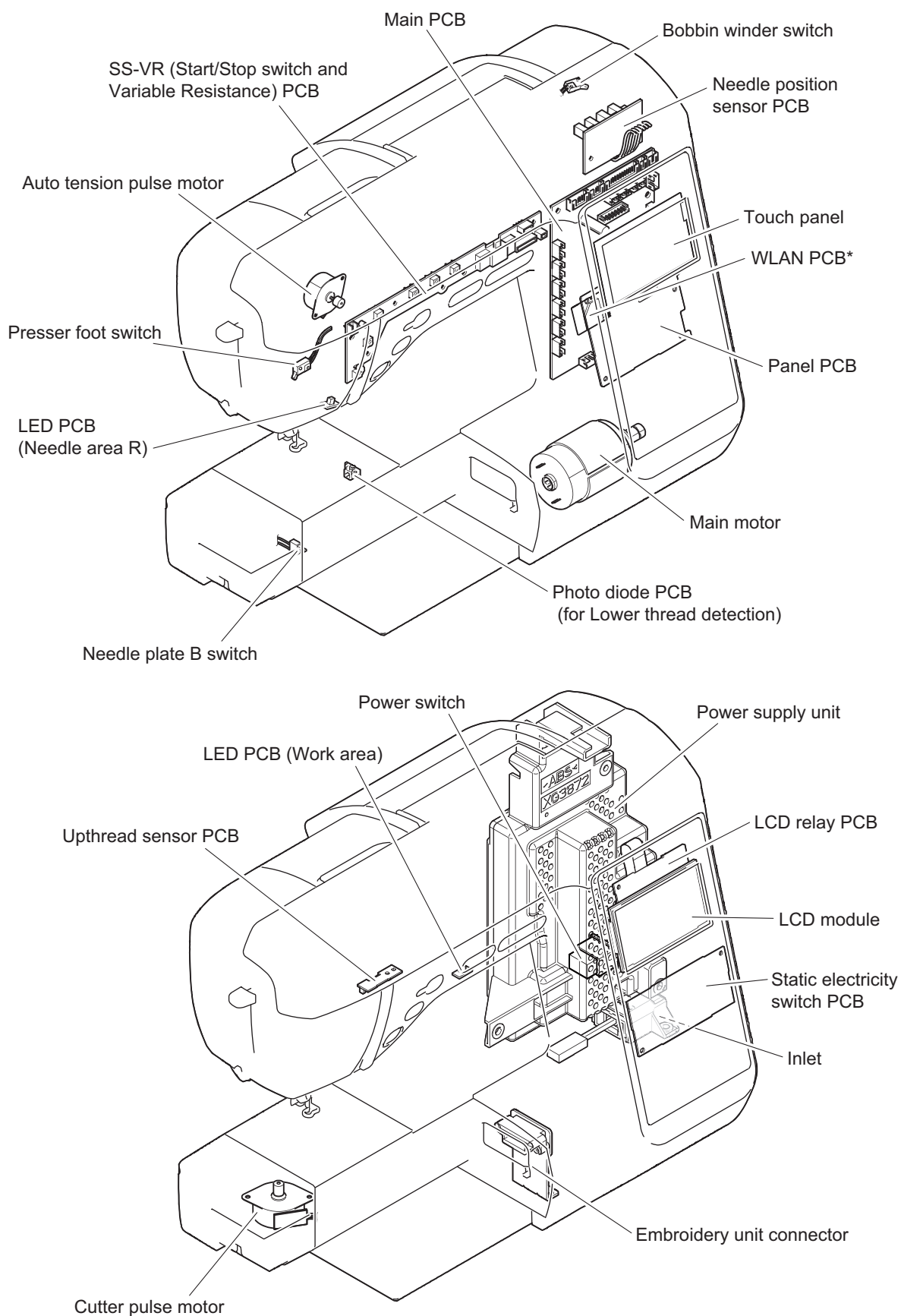
- (A) Up and down movement of needle bar, movement of thread take-up lever and zigzag movement of needle bar mechanism



(B) Movement of feed dog and rotary hook

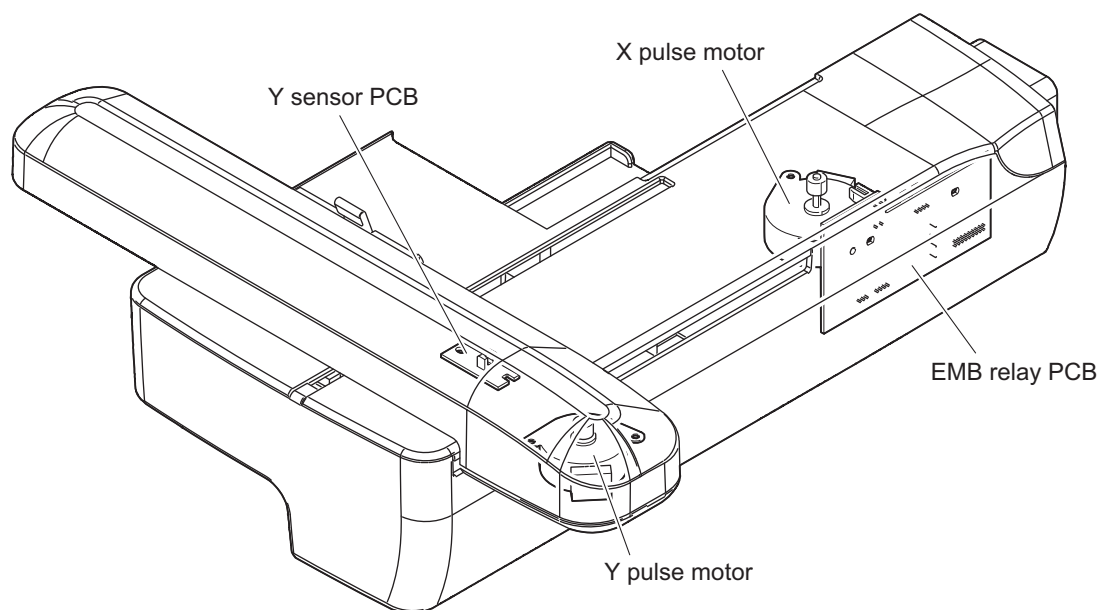


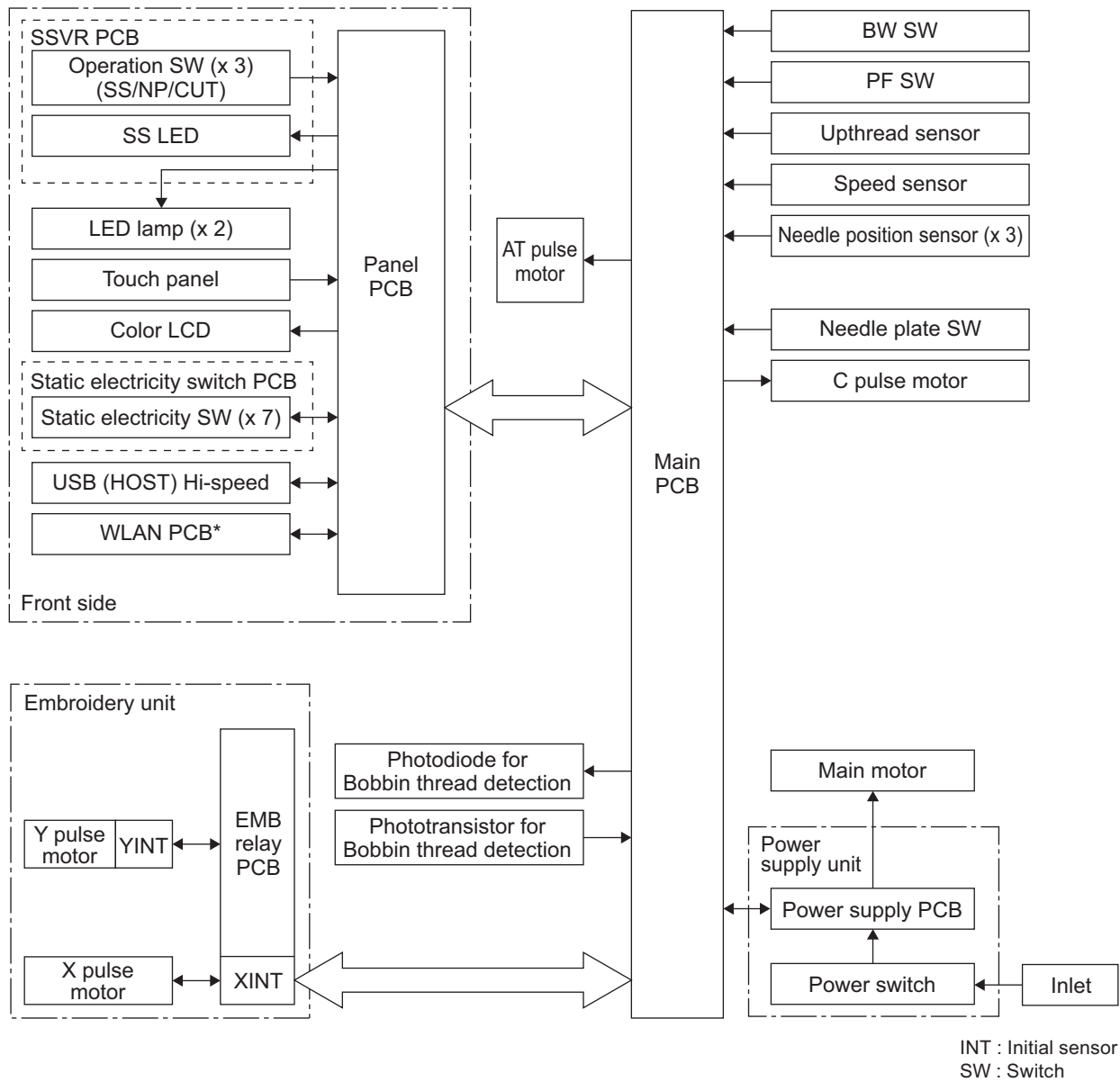
Main body



* Not equipped on some models.

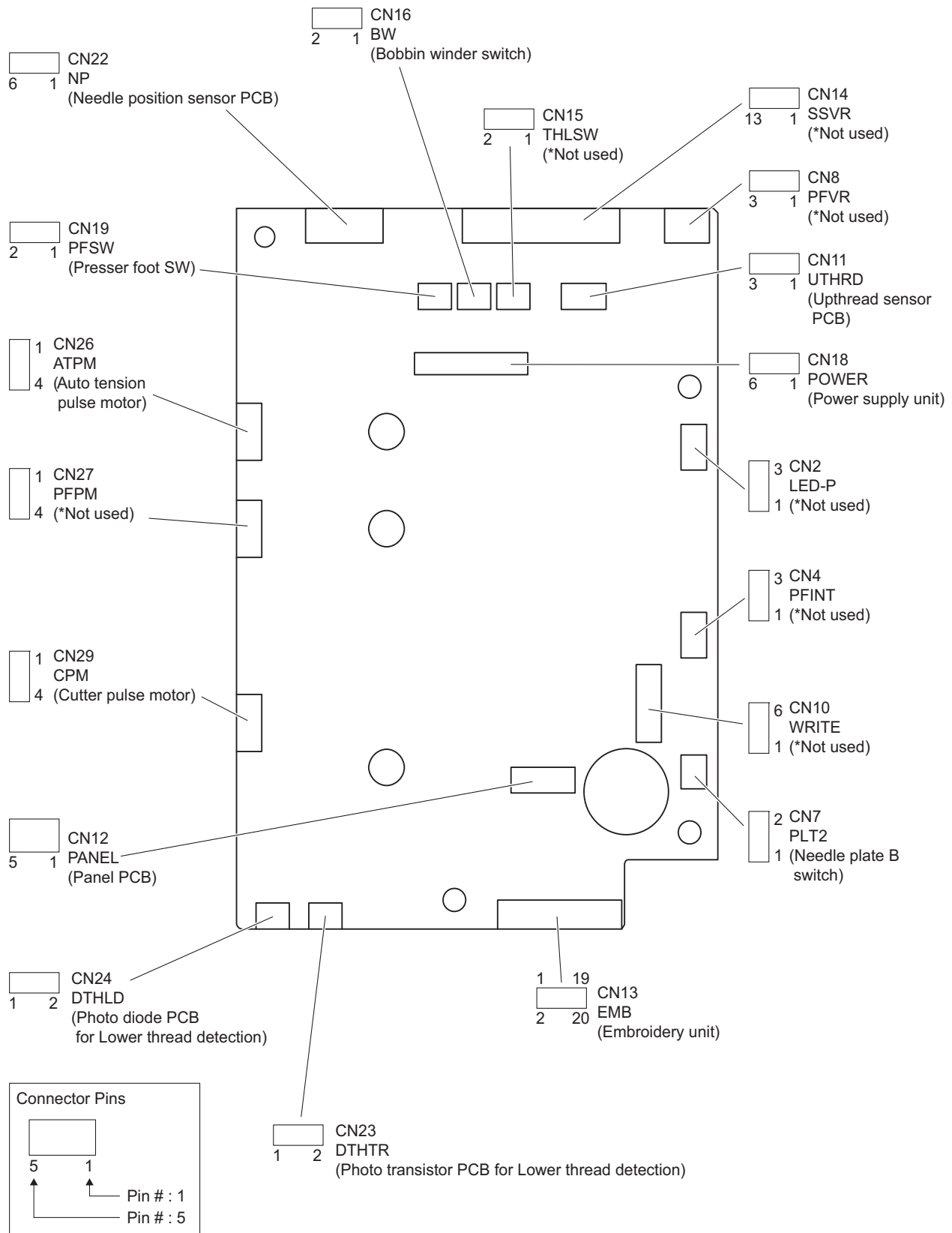
Embroidery unit



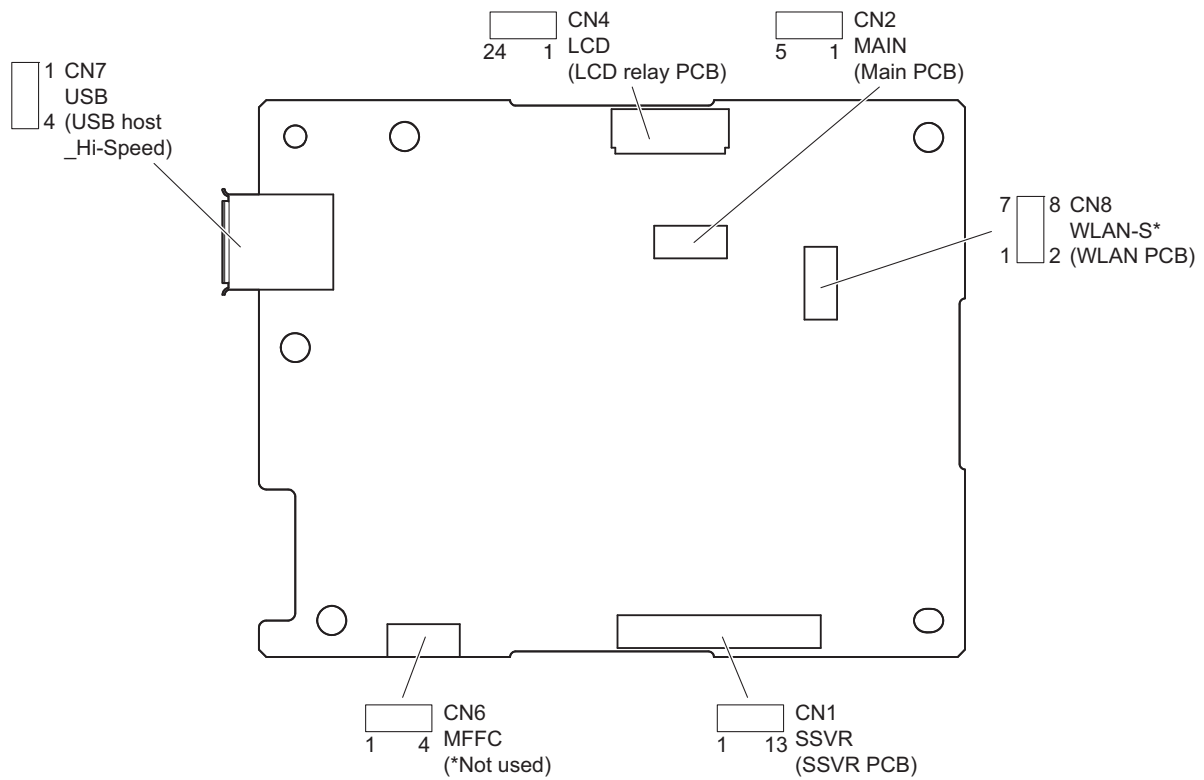


The illustration below shows layout for Printed Board connectors.

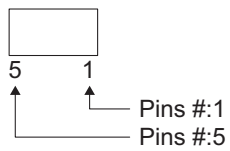
■ Main PCB



■ Panel PCB

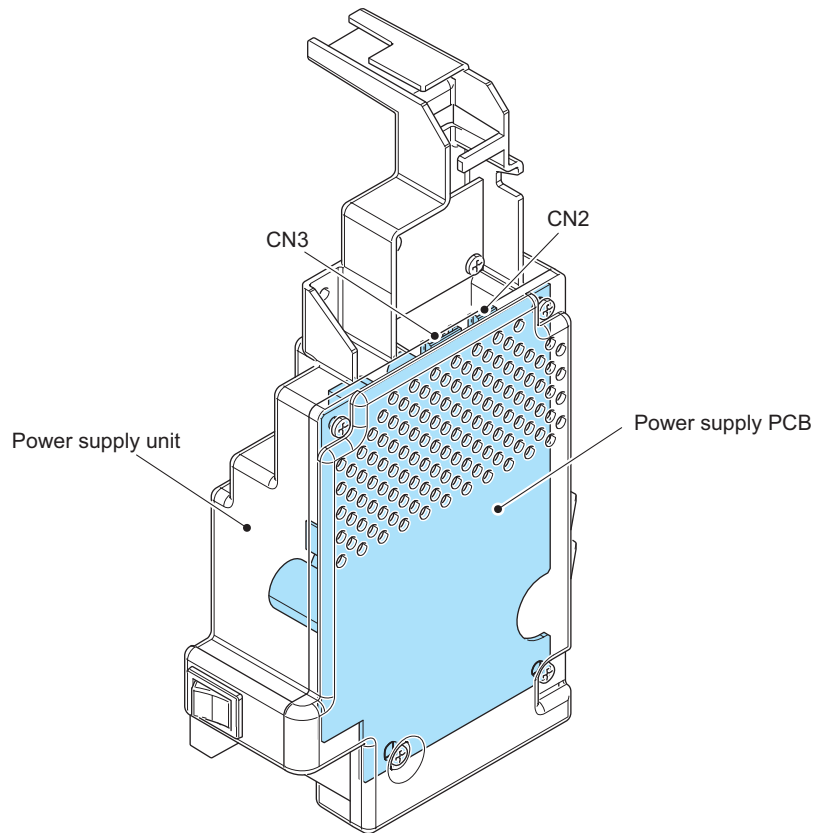


Connector Pins

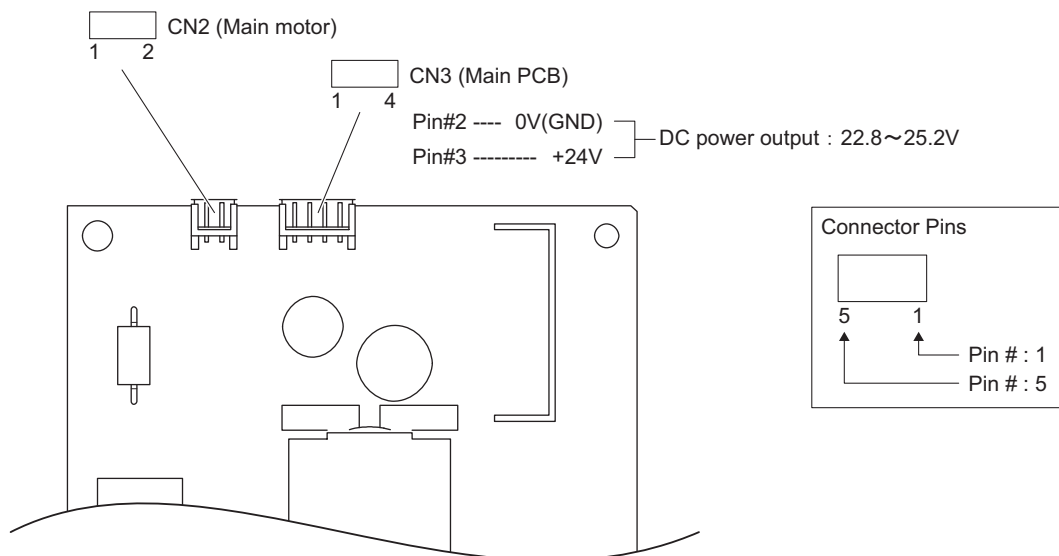


* Not equipped on some models.

■ Power supply unit



■ Power supply PCB assy



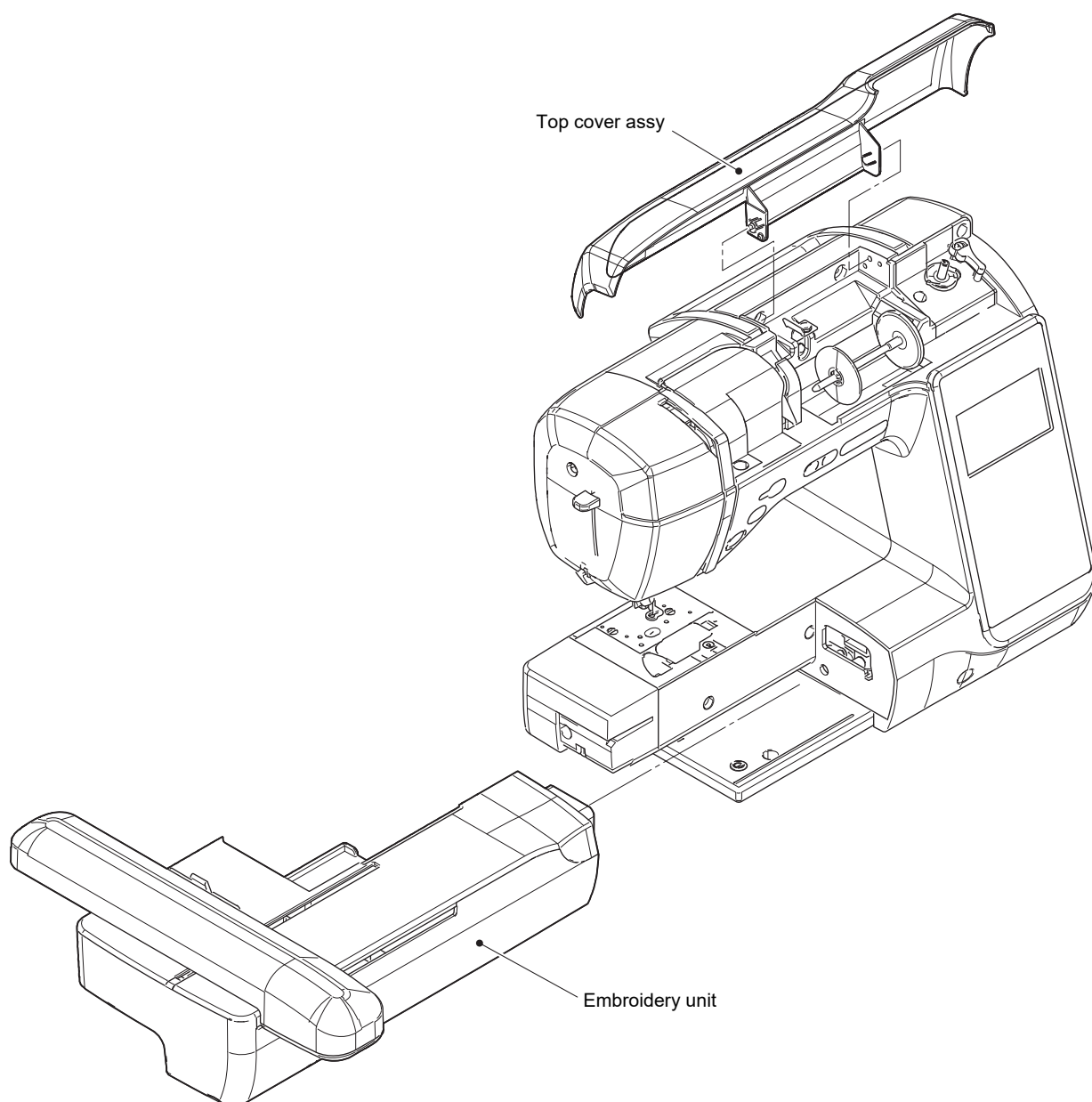
Start/Stop (SS) button.	Button for starting and stopping the sewing machine. The machine operates at a slow speed while the button is being held down.
Needle position button	This button toggles the needle between the up and down positions.
Thread cutter button	This button is for cutting the thread. In case the button is pressed, the thread is cut regardless of the needle position and stop with the needle up.
Touch panel	Used to select pattern and input test mode number required for sewing by simply touching the display on the panel. This simplifies the operation for selecting the desired pattern and number.
Needle position (NP) sensor.	This sensor detects the drive timing of each pulse motor and the vertical stop of the needle position. It detects the upper shaft angle of rotation by using a shutter attached to the upper shaft and an optical sensor.
Speed sensor.	This sensor detects the rotational speed of the main motor. It detects the upper shaft rotational speed by using a shutter attached to the upper shaft and an optical sensor.
Presser switch.	This switch detects the vertical position of the presser foot lifter.
BW (bobbin winder) switch	This switch detects whether the bobbin is set for winding or not, when the bobbin thread is wound.
Needle plate switch	This switch detects normal needle plate or straight stitch needle plate.
ELECSW (Static electricity SW) PCB assy (in panel assy)	This PCB assy is equipped with sensors which detect the change in static electricity capacity when a finger touches it.
LED lamp PCB assy.	White LED lamps for illuminating the work space.
Upthread sensor PCB assy	Detects the presence or absence of the upper thread and whether it is cut or not.
Initial sensor PCB assy.	Detects the original position of each pulse motor.
Photo diode PCB assy, photo transistor PCB assy	This assy detects the bobbin thread is low.

2 Removal of Cover

Main body.....	2 - 2
Embroidery unit.....	2 - 8

1 Removal of Top cover assy and Embroidery unit

1. Remove the top cover assy.
2. Remove the embroidery unit.



2 Removal of Needle plate B assy, Free arm cover and Free arm front cover assy

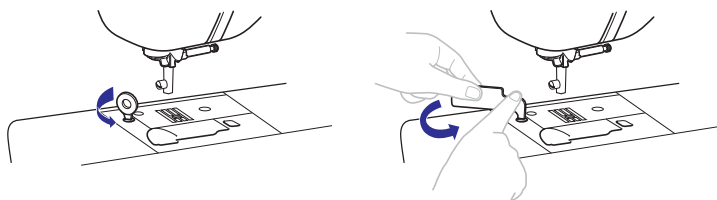
1. Remove the needle plate B assy.

→Refer to 3 - 2 Disassembly of "NT lower thread cutter of needle plate B assy".



Disassembling note

- If there is a screw in the needle plate cover, use the disc shaped screwdriver or L-shaped screwdriver to remove the screw in the needle plate cover.



2. Remove the screw A to remove the free arm cover.

3. Remove the two screws B, release the hook from the hook tray, and remove the free arm front cover assy.



Disassembling note

- Be careful not to damage the hook.

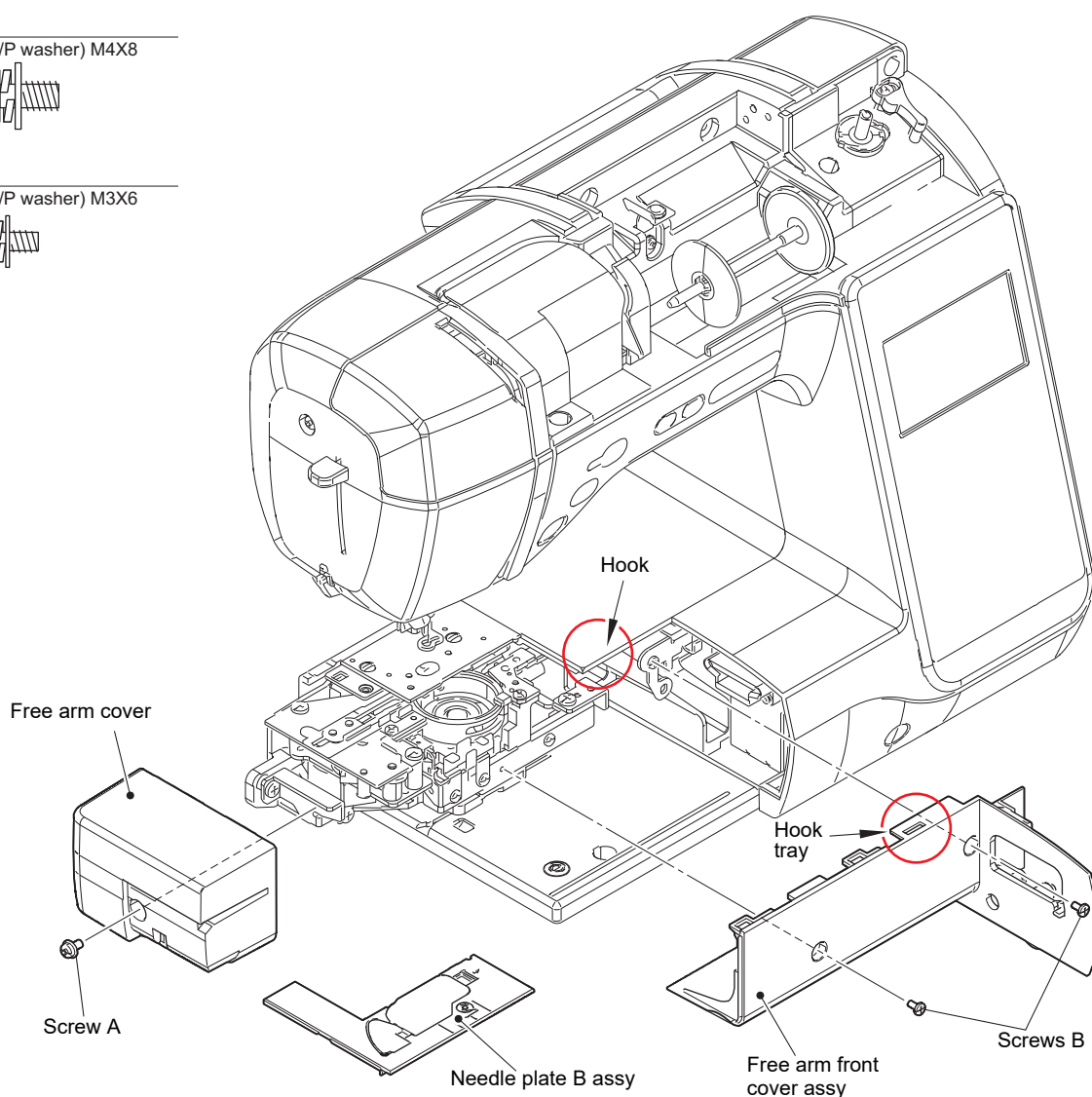
Screw A

Screw, Pan (S/P washer) M4X8



Screw B

Screw, Pan (S/P washer) M3X6



3 Removal of Face plate assy and Front thread guard cover

1. Remove the two screws A to remove the face plate assy.

→Refer to 3 - 3 Disassembly of "NT lower thread cutter of face plate assy".

2. Remove the screw B to remove the front thread guard cover.

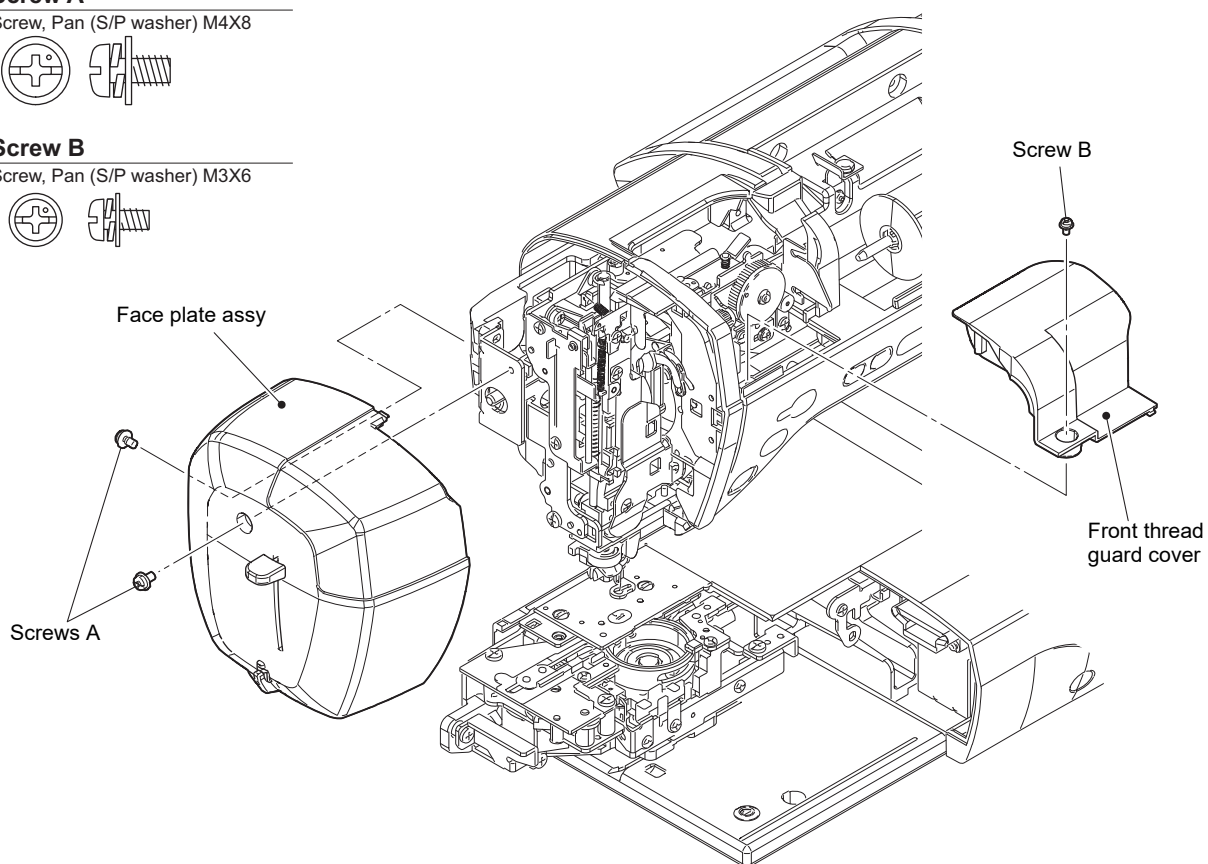
Screw A

Screw, Pan (S/P washer) M4X8



Screw B

Screw, Pan (S/P washer) M3X6



4 Removal of Front cover assy

1. Remove the three screws A and screw B from the front cover assy.
2. Release the three hooks A, B, C of the front cover assy and the rear cover assy from the each hook tray, and remove the upper side of rear cover assy from the front cover assy.
3. Release the two hooks D, E on the bottom side of front cover assy from the base plate to remove the front cover assy.
4. Disconnect the lead wire assy main-panel from the panel PCB assy.



Assembling note

- Refer to "Wiring of Lead wire assy main-panel".

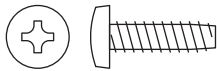


Disassembling note

- Be careful not to damage the hook.

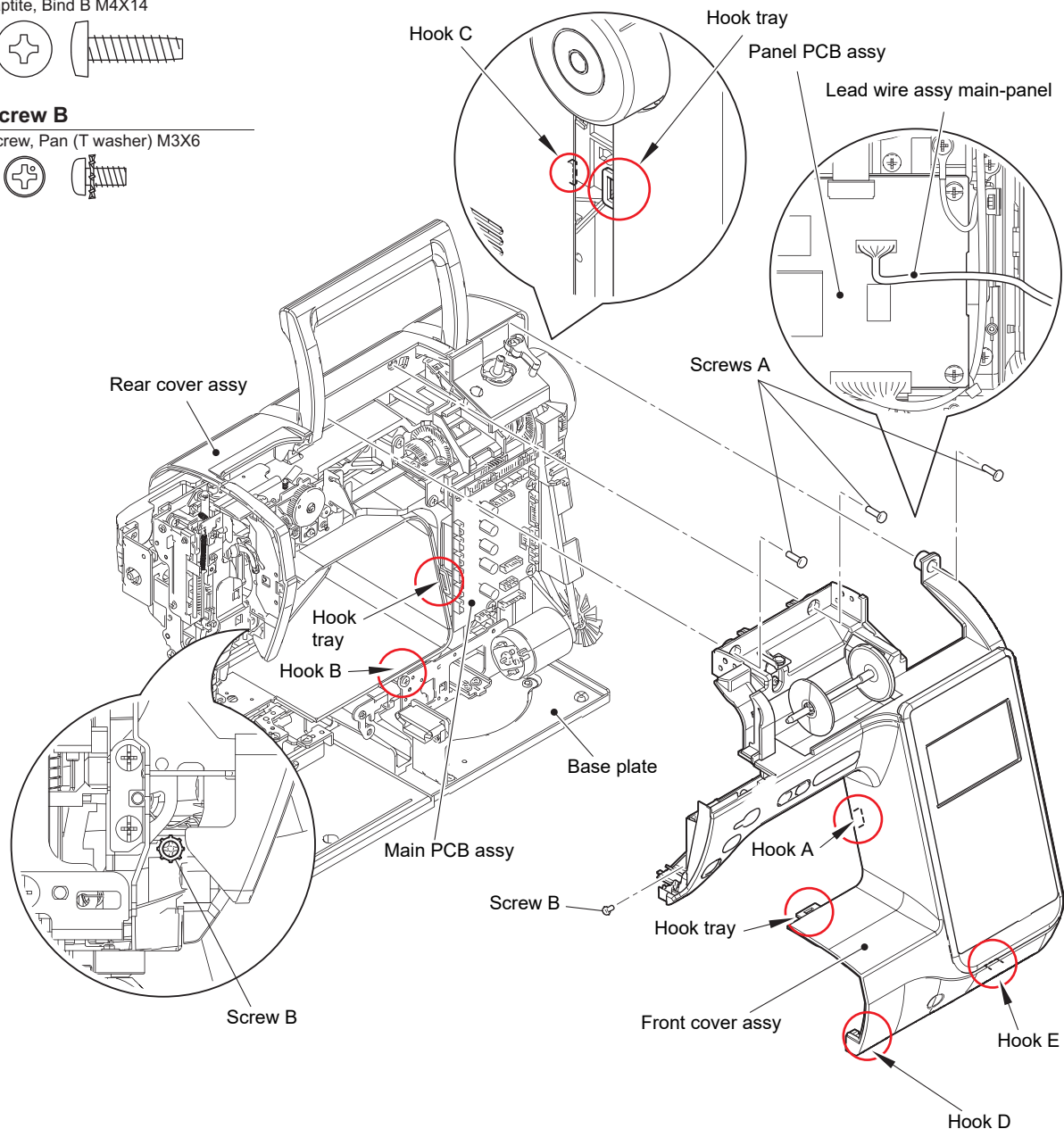
Screw A

Taptite, Bind B M4X14



Screw B

Screw, Pan (T washer) M3X6



5 Removal of Rear cover assy

1. Remove the two screws A, the screw B, and the screw C from the rear cover assy.
2. Remove the rear cover assy while bending the part "A" to get over the switch of power unit.

Screw A

Screw, Pan (S/P washer) M4X14



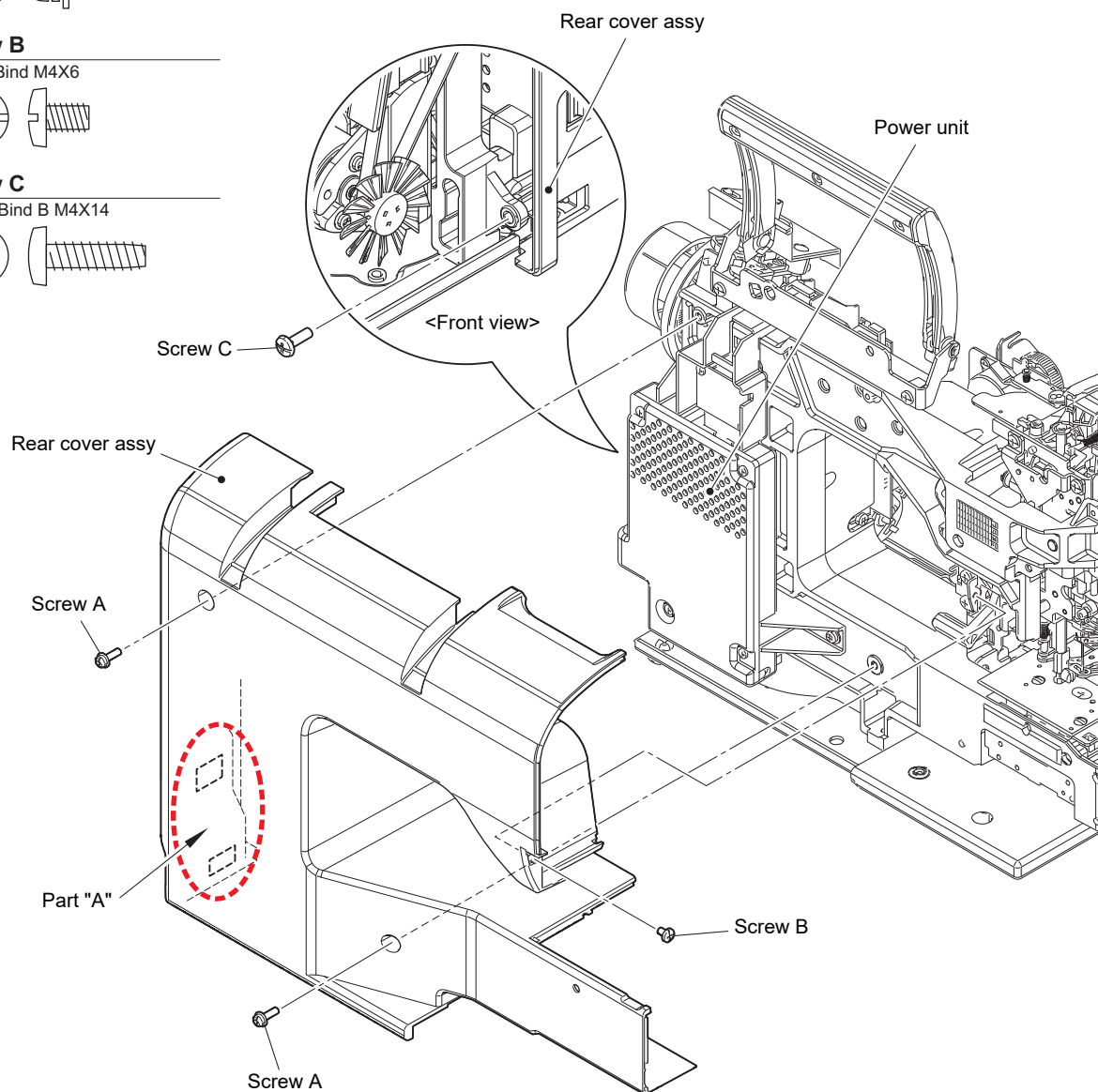
Screw B

Screw, Bind M4X6



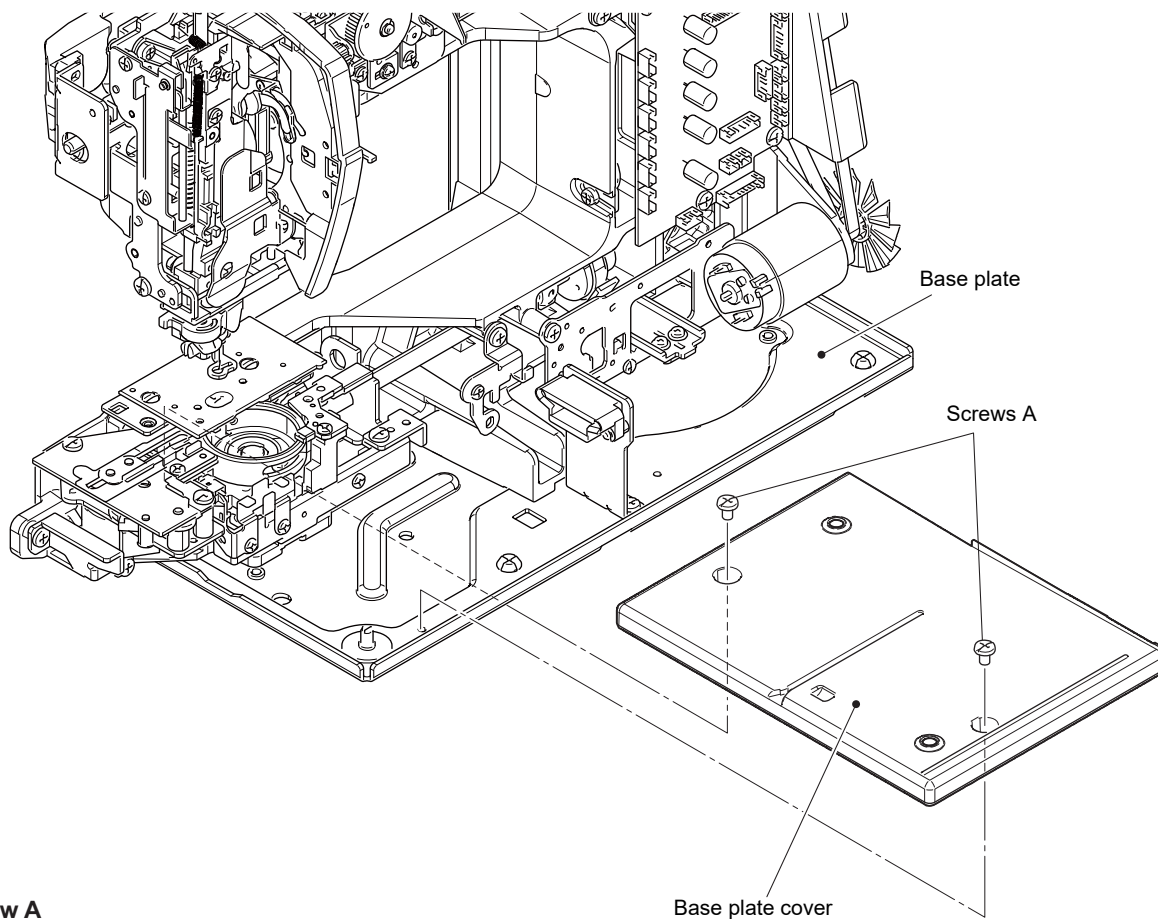
Screw C

Tapite, Bind B M4X14



6 Removal of Base plate cover

1. Remove the two screws A to remove the base plate cover from the base plate.

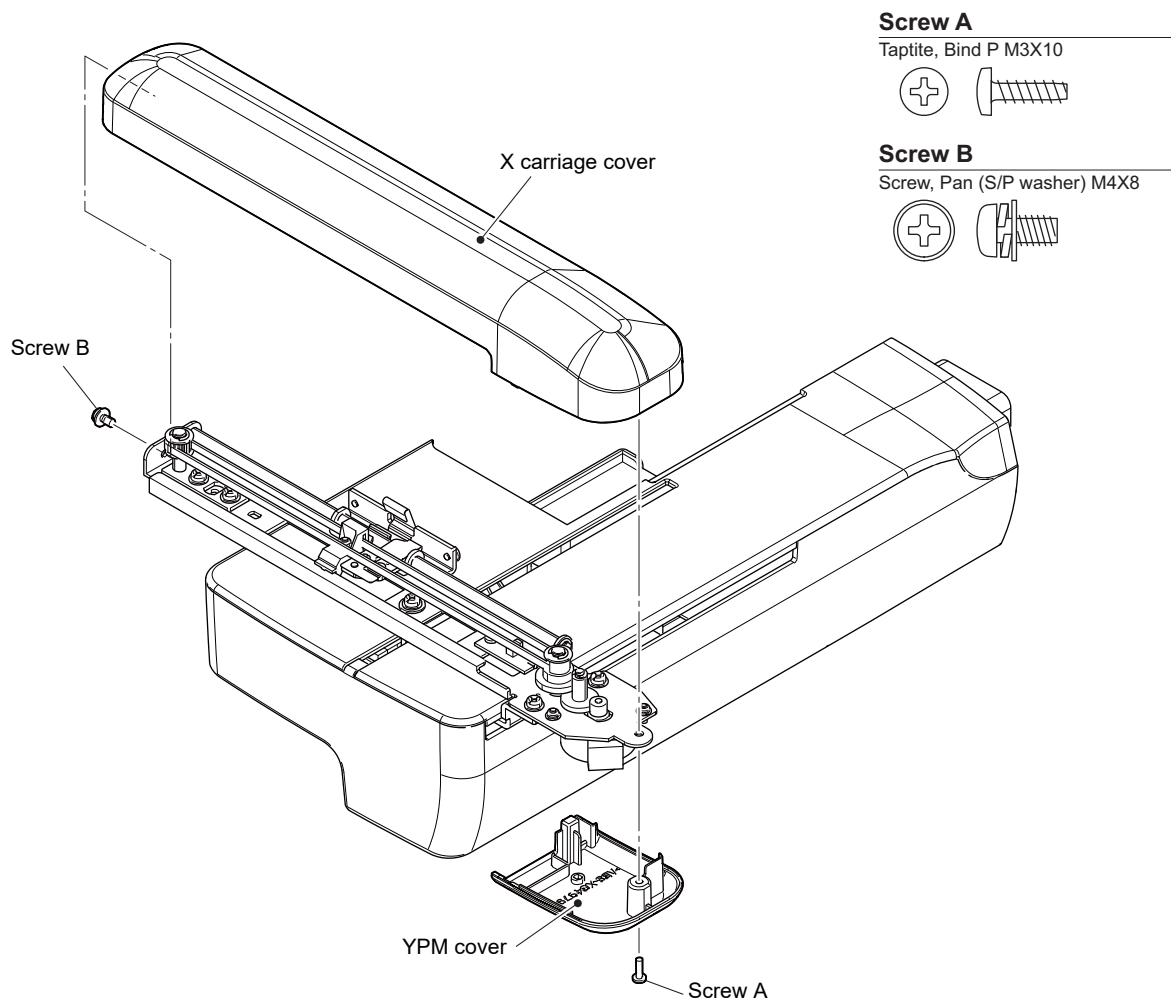


Screw A

Screw, Blind M4X6



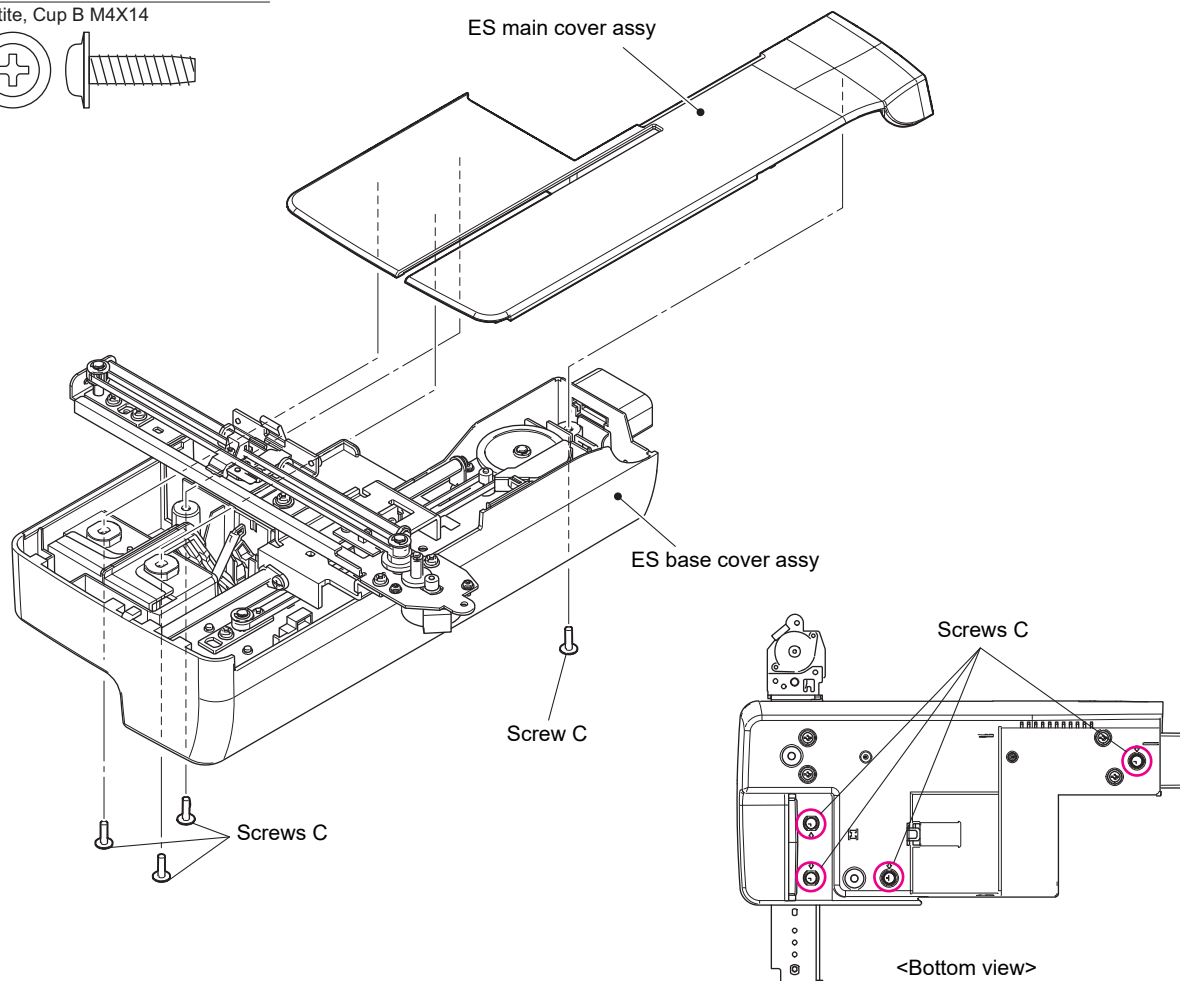
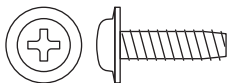
1. Remove the screw A to remove the YPM cover.
2. Remove the screw B to remove the X carriage cover.



3. Remove the four screws C to remove the ES main cover assy from the ES base cover assy.

Screw C

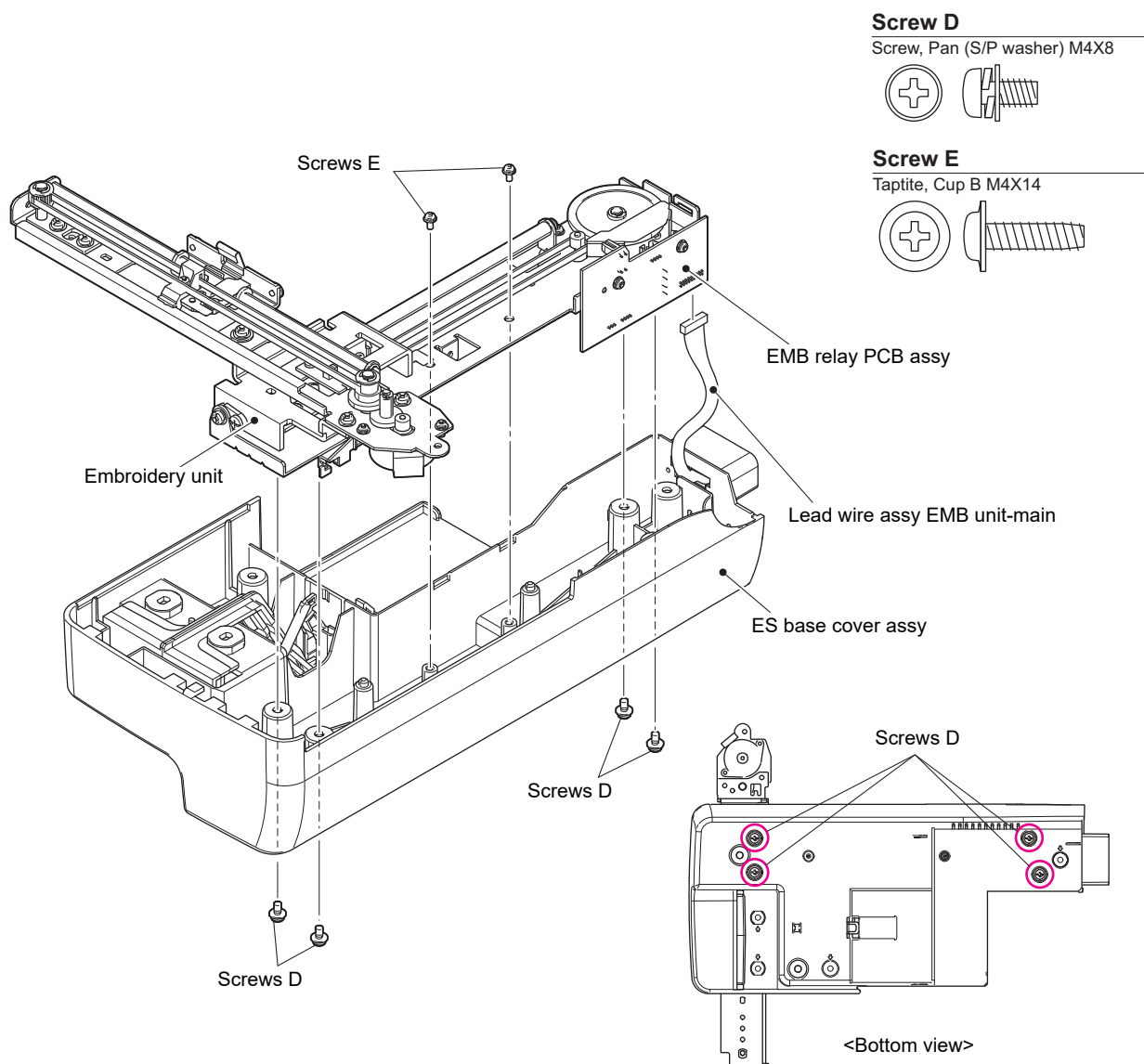
Taplite, Cup B M4X14



4. Remove the four screws D from the ES base cover assy.
5. Remove the two screws E from the embroidery unit.
6. Lift the embroidery unit, and disconnect the lead wire assy EMB unit-main from the EMB relay PCB assy to remove the embroidery unit.

**Assembling note**

- Refer to "Wiring of Lead wire supply assy:Sleeve".



3 Disassembly with Assembling note

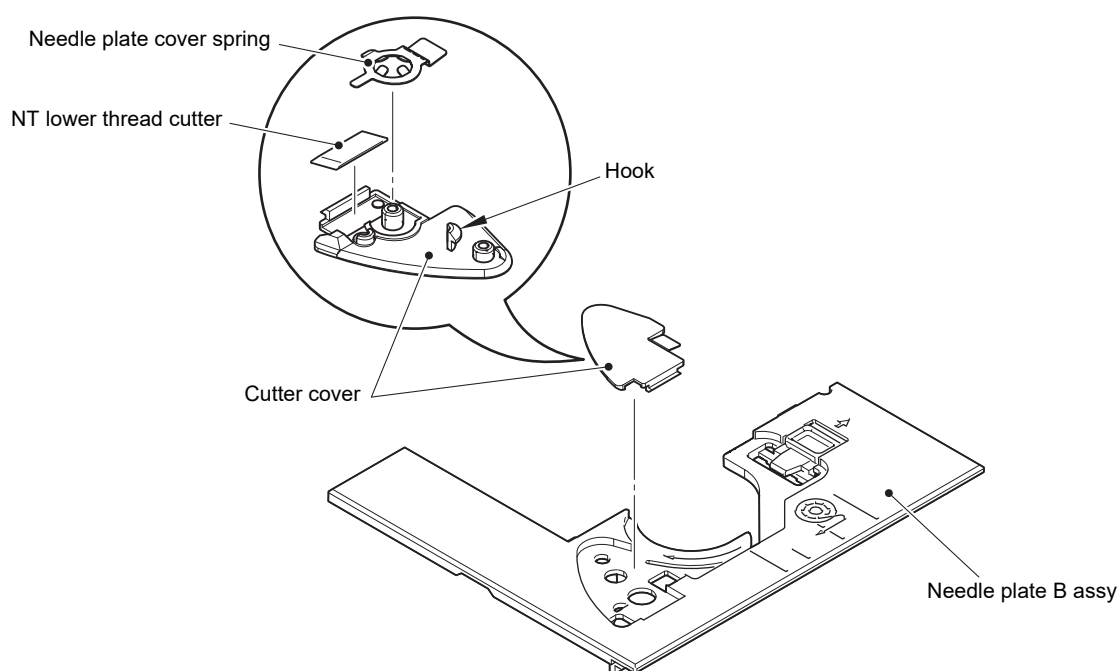
Disassembly	3 - 2
Lubrication.....	3 - 44

→Refer to 2 - 3 "Removal of Needle plate B assy, Free arm cover and Free arm front cover assy".

1. Release the hook to remove the cutter cover from the needle plate B assy.
2. Remove the needle plate cover spring and the NT lower thread cutter from the cutter cover.

**Caution**

- When replacing the NT lower thread cutter is to be careful not to get hurt.

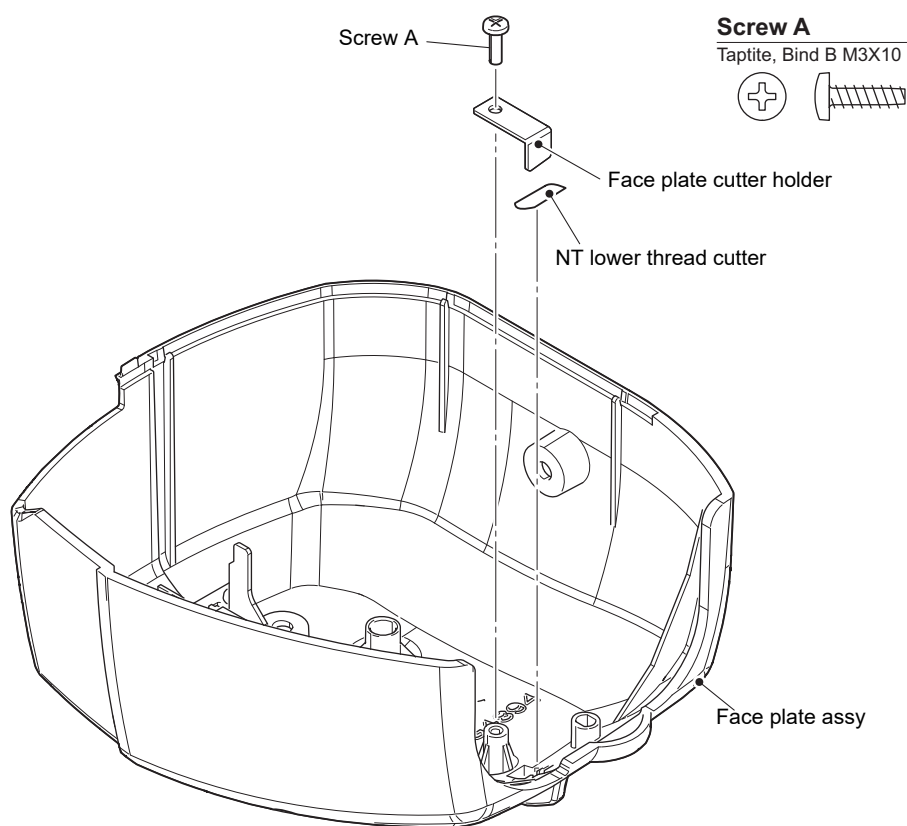


→Refer to 2 - 4 "Removal of Face plate assy and Front thread guard cover".

1. Remove the screw A to remove the face plate cutter holder from the face plate assy.
2. Remove the NT lower thread cutter from the face plate assy.

**Caution**

- When replacing the NT lower thread cutter is to be careful not to get hurt.



→Refer to 2 - 5 "Removal of Front cover assy".

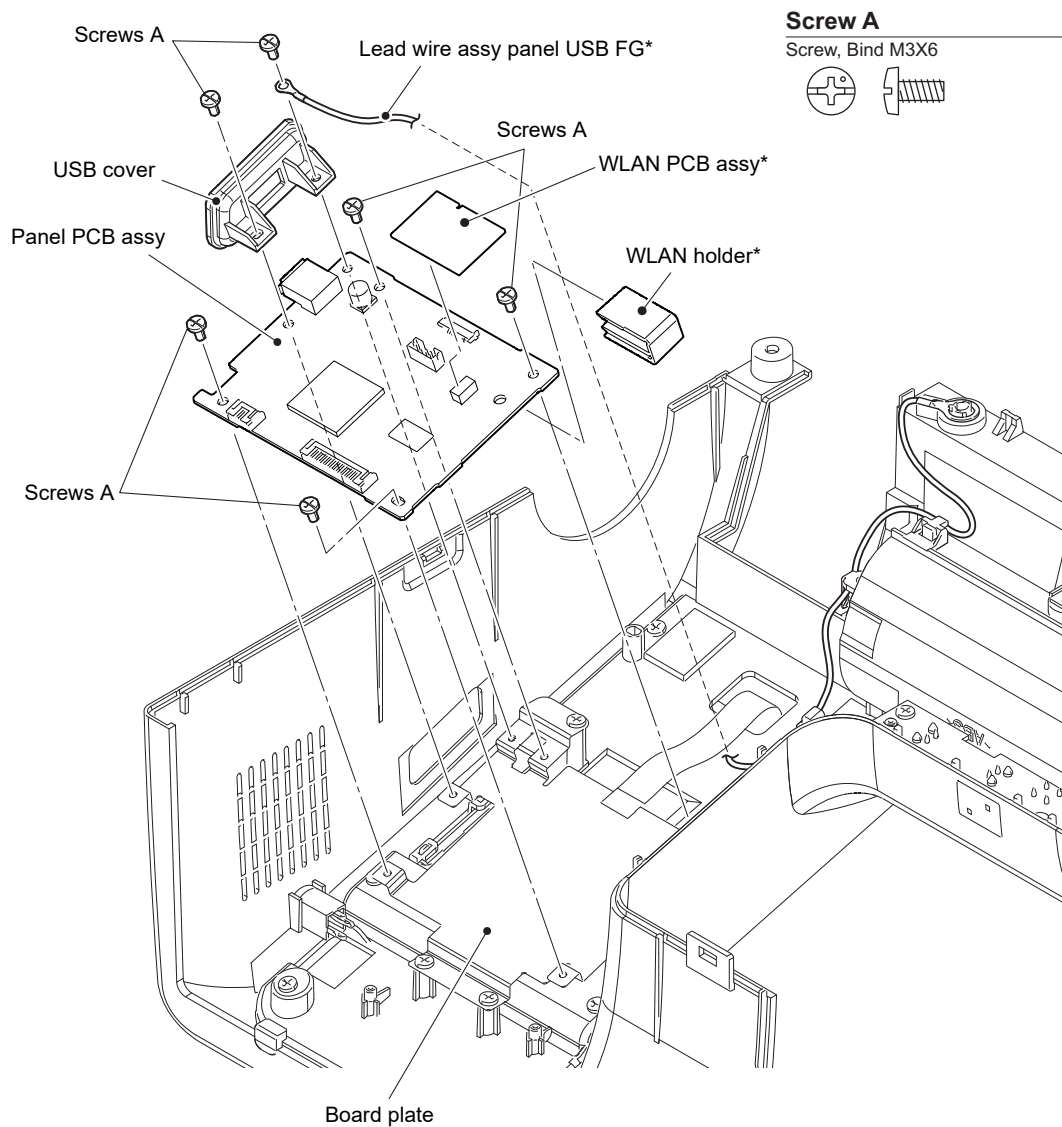
1. Remove the WLAN holder from the panel PCB assy.
2. Disconnect the WLAN PCB assy (PCB T77H505.00 ASSY 04) from the panel PCB assy.
3. Disconnect all connectors and FFC from the panel PCB assy.



Assembling note

- Refer to "Wiring of Front cover assy".

4. Remove the six screws A to remove the lead wire assy panel USB FG, the USB cover, and the panel PCB assy from the board plate.



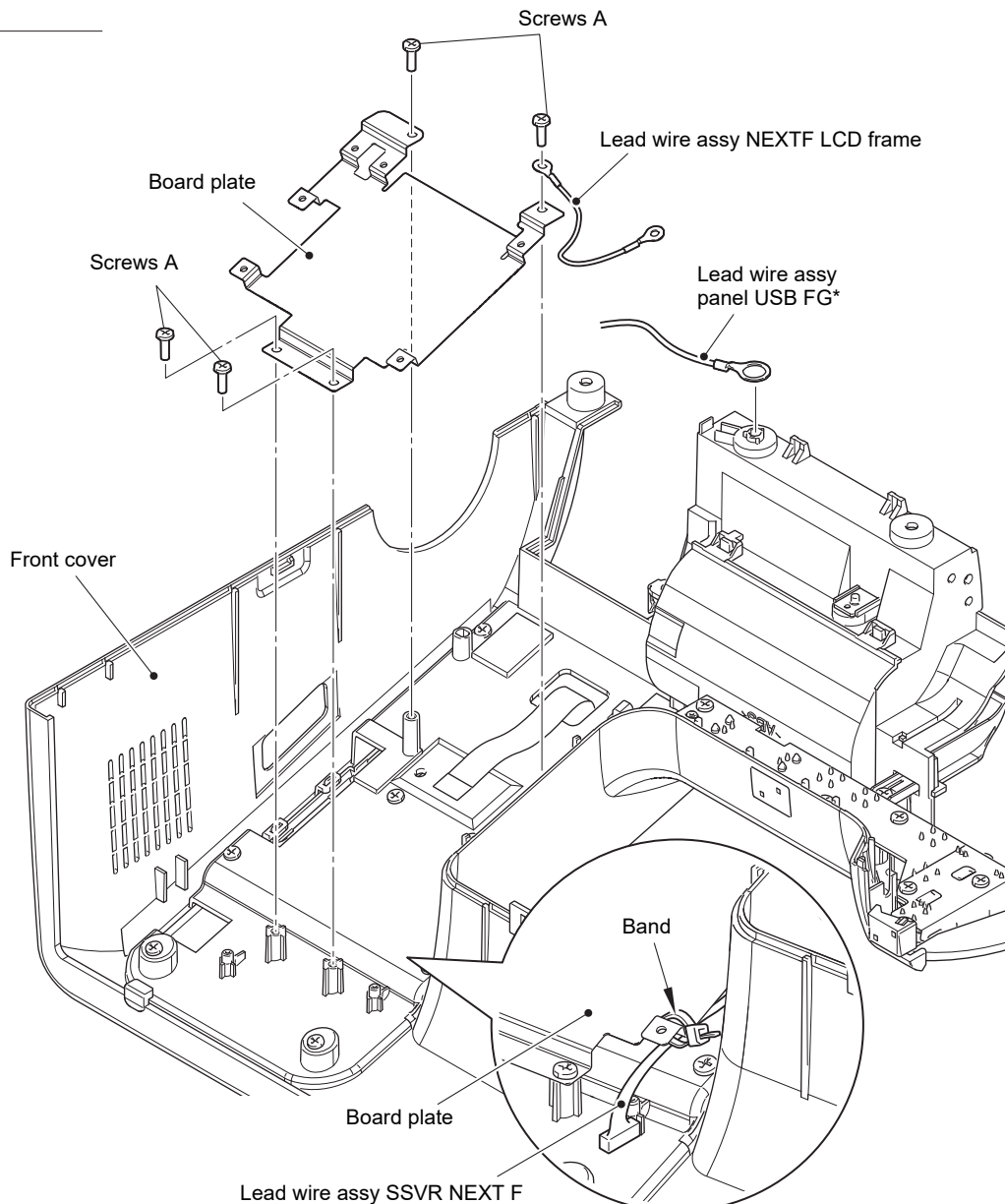
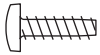
1. Cut the band and release the lead wire assy SSVR NEXT F from the board plate.
2. Remove the four screws A to remove the lead wire assy NEXTF LCD frame and the board plate from the front cover.
3. Release the lead wire assy panel USB FG from the securing fixtures and remove it from the front cover.

**Assembling note**

- Refer to "Wiring of Front cover assy".

Screw A

Taprite, Bind B M3X10



* Not equipped on some models.

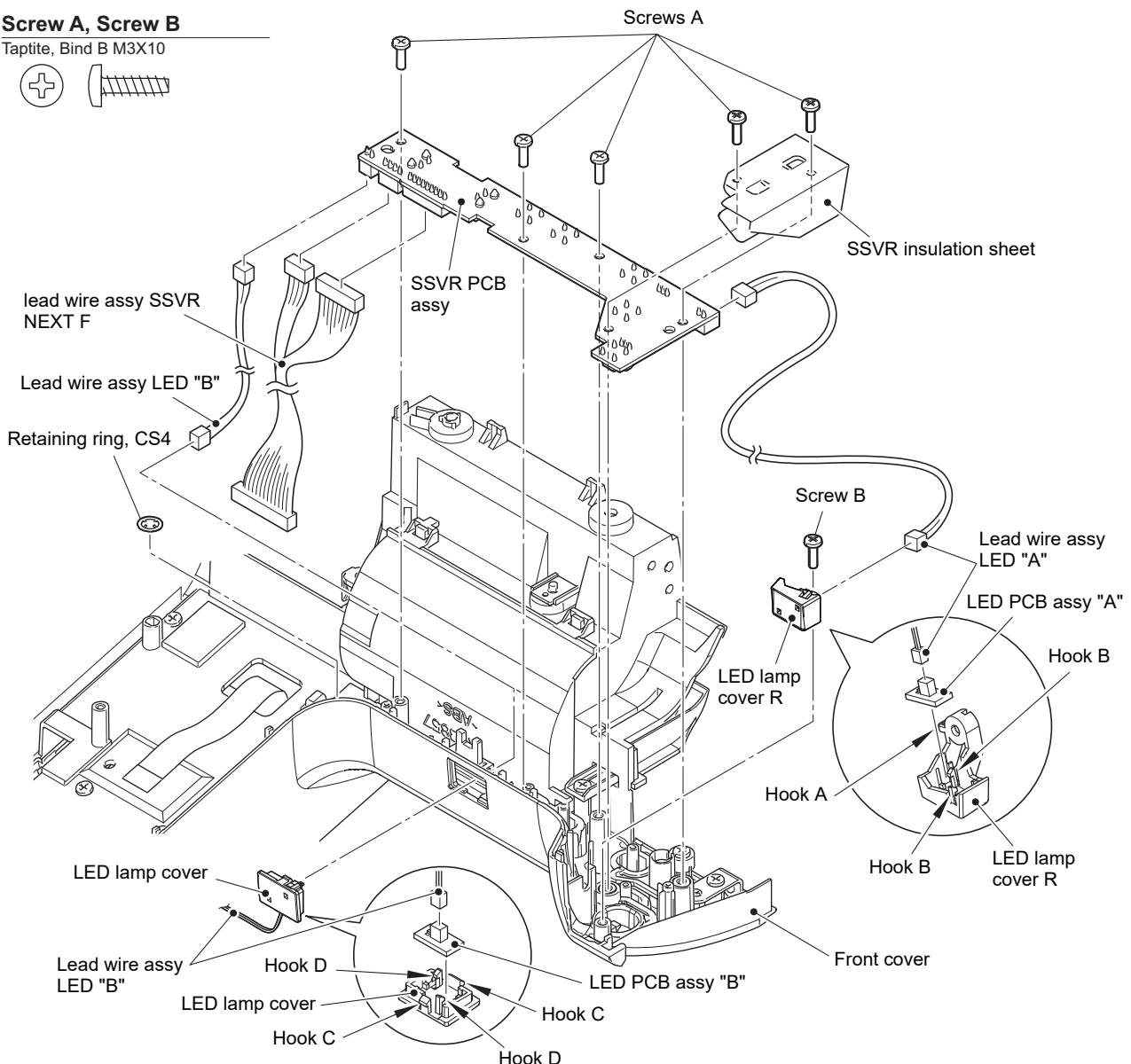
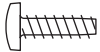
1. Disconnect the lead wire assy LED "A" from the SSVR PCB assy.
2. Remove the five screws A of the SSVR PCB assy.
3. Disconnect the lead wire assy LED "B" and the lead wire assy SSVR NEXT F from the SSVR PCB assy. Remove the SSVR PCB assy from the front cover.
4. Remove the screw B to remove the LED lamp cover R from the front cover.
5. Remove the lead wire assy LED "A" from the hook A of the LED lamp cover R, pull out from the LED PCB assy "A".
6. Release the two hooks B to remove the LED PCB assy "A" from the LED lamp cover R.
7. Disconnect the lead wire assy LED "B" from LED PCB assy "B".
8. Release the two hooks C to remove the LED lamp cover from the front cover.
9. Release the two hooks D to remove the LED PCB assy "B" from the LED lamp cover.
10. Remove the retaining ring, CS4 to remove the lead wire assy SSVR NEXT F and the lead wire assy LED "B" from the front cover.

**Assembling note**

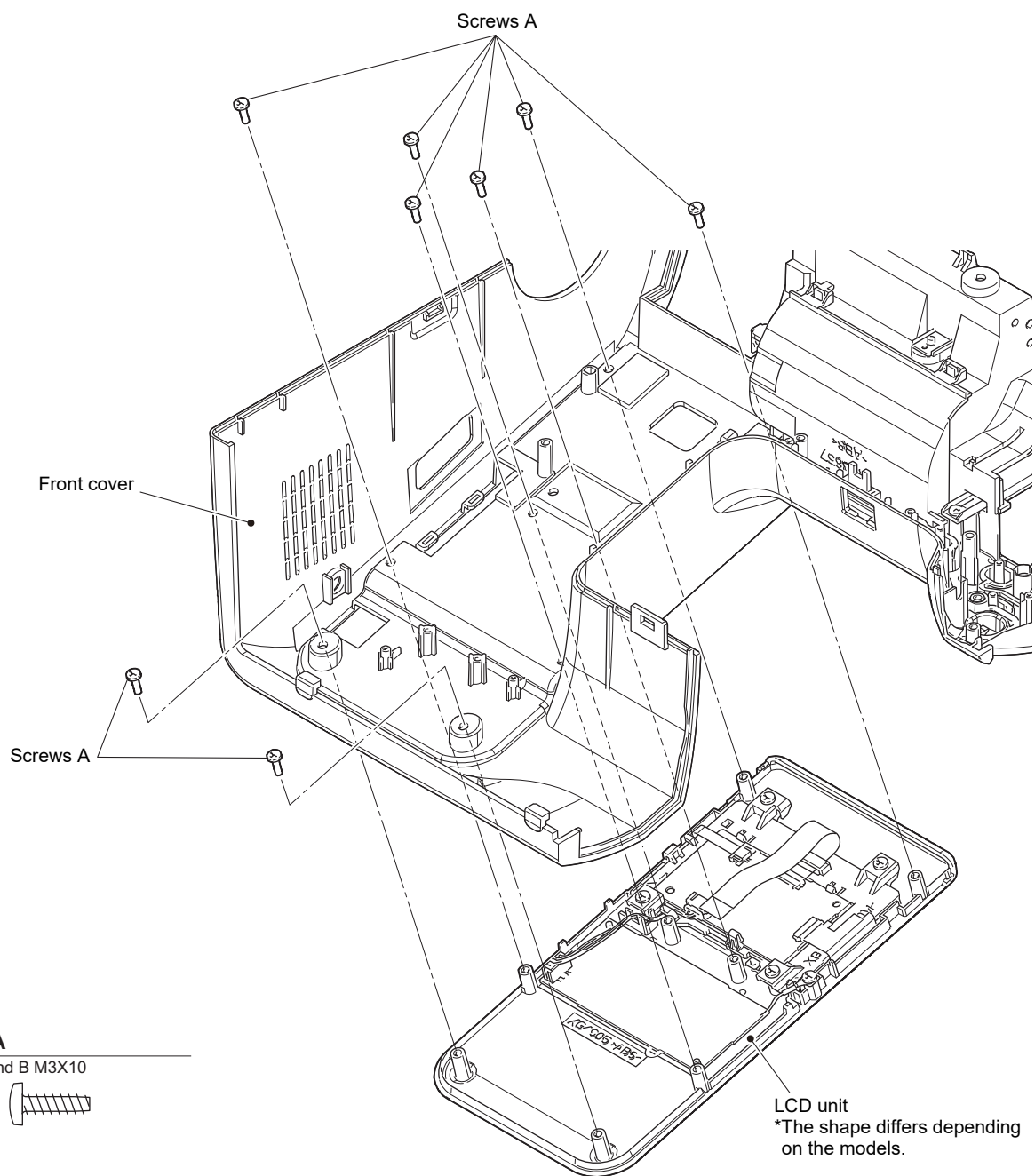
- Refer to "Wiring of Front cover assy".

Screw A, Screw B

Tapite, Bind B M3X10



1. Remove the eight screws A to remove the LCD unit from the front cover.



2. Disconnect all connectors from the LCD relay PCB assy.

**Assembling note**

- Refer to "[Wiring of LCD unit](#)".

3. Remove the four screws B to remove the panel cover lid from the LCD unit.
4. Release the hook to remove the LCD relay PCB assy from the panel cover lid.
5. Remove the LCD assy from the LCD unit.

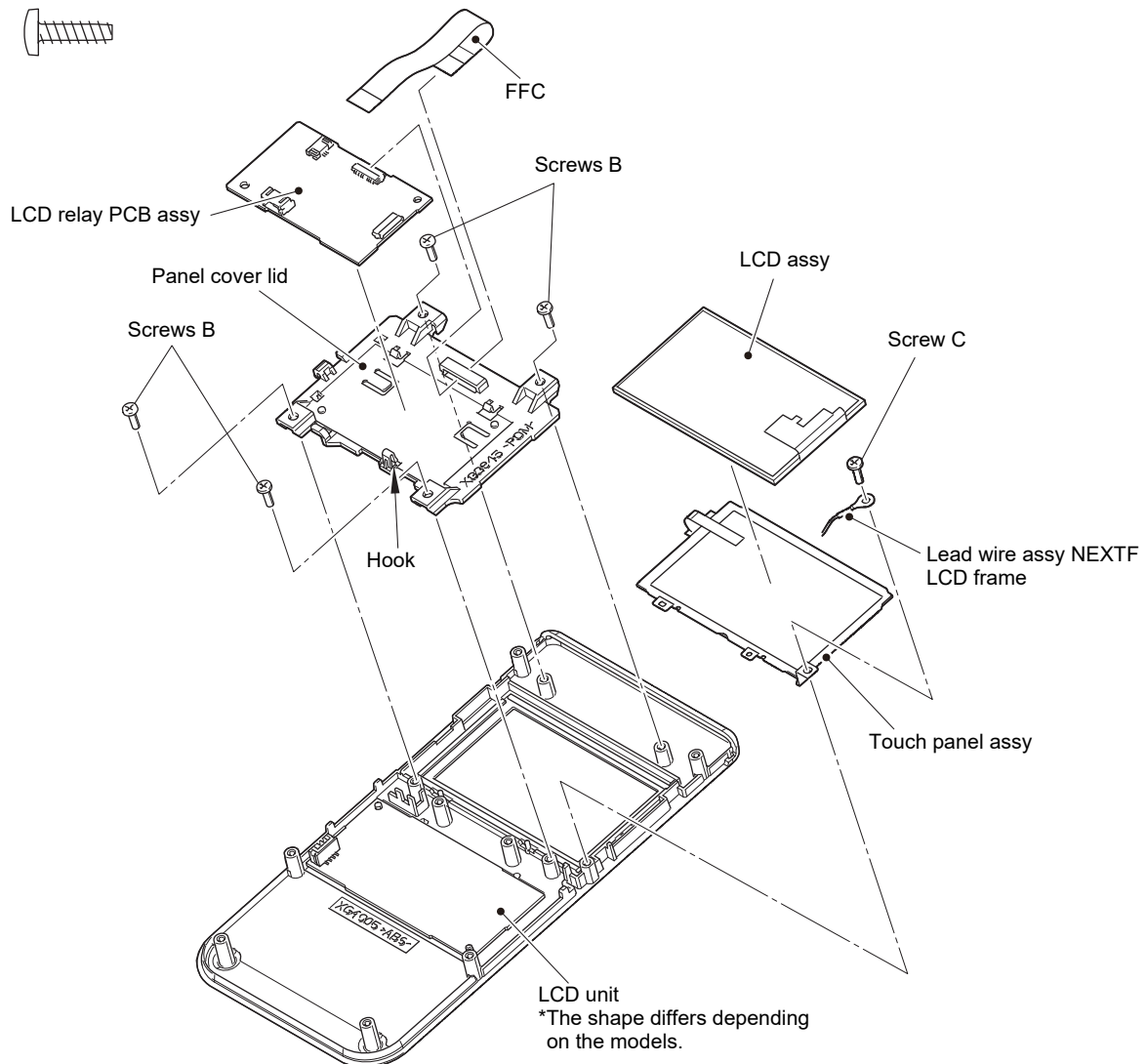
**Assembling note**

- When replacing the LCD assy, perform the "[4 - 23 Switching LCD display setting](#)" after the machine is reassembled.

6. Remove the screw C to remove the lead wire assy NEXTF LCD frame and the touch panel assy.

Screw B, C

Taprite, Bind B M3X10



1. Release the clip to unbind the lead wires.

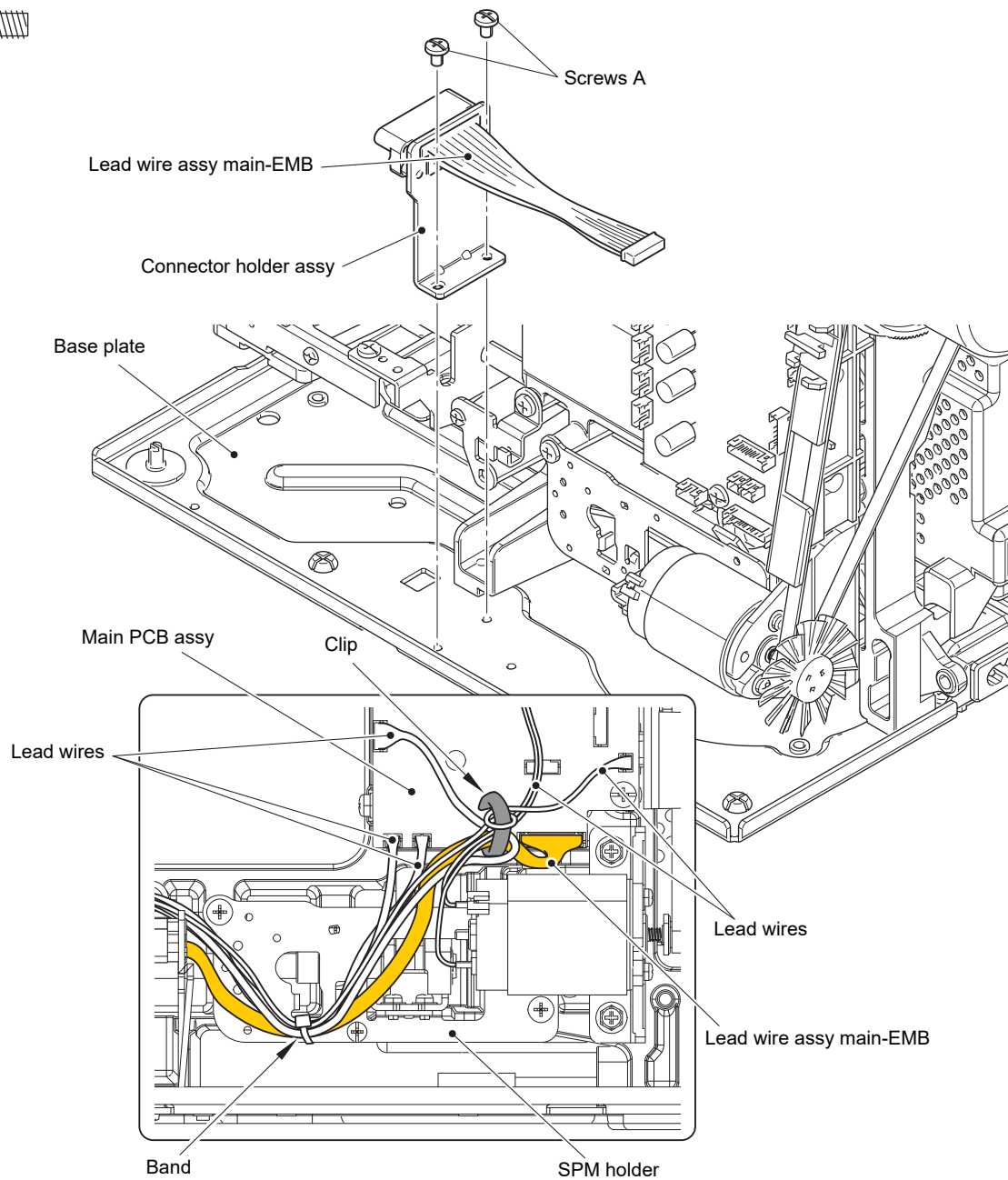
**Assembling note**

- Refer to "[Wiring of Thread cutter module / Feed module](#)", "[Wiring of Lower side of Main PCB](#)".

2. Cut the band to release the lead wires from the SPM holder. Disconnect the lead wire assy main-EMB from the main PCB assy.
3. Remove the two screws A to remove the connector holder assy from the base plate.

Screw A

Screw, Bind M4X6

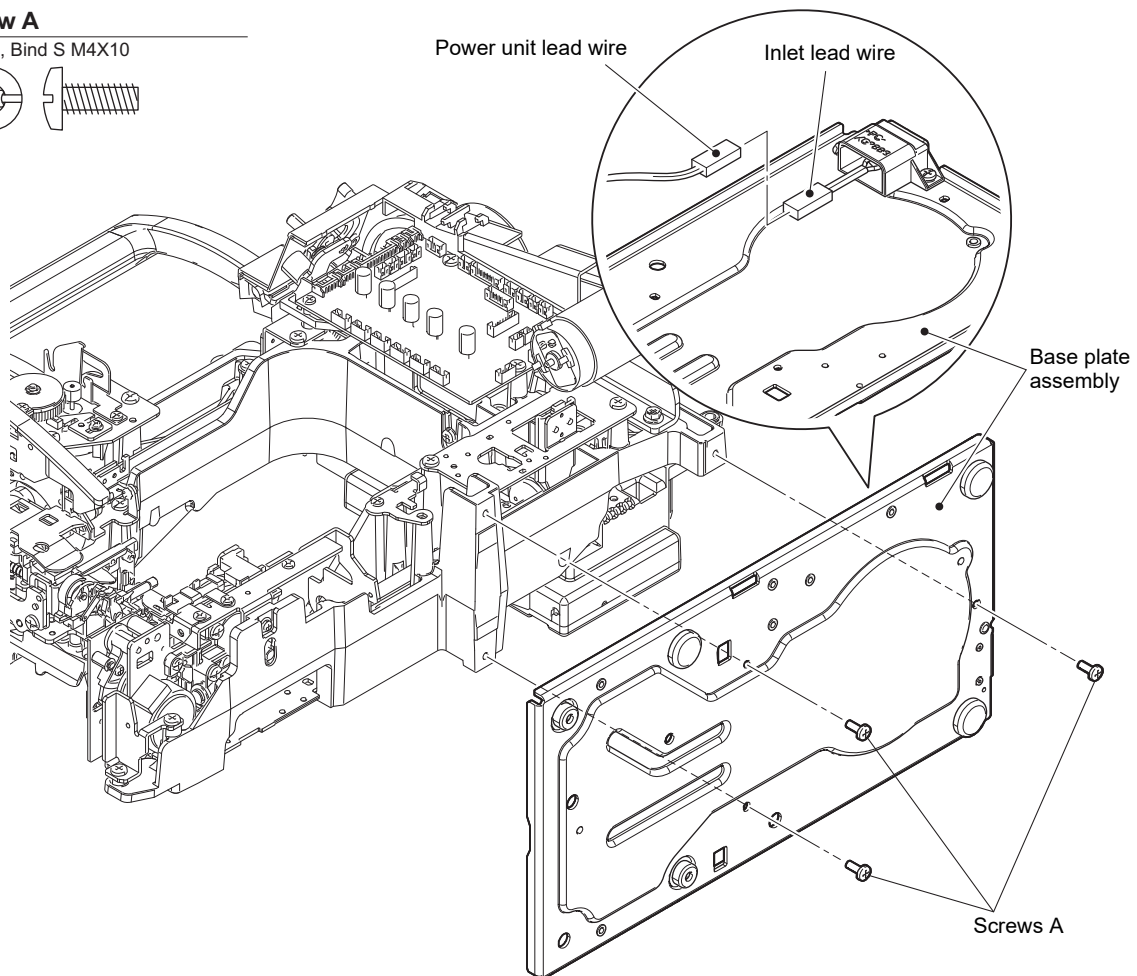
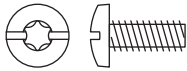


→Refer to 2 - 7 "Removal of Base plate cover".

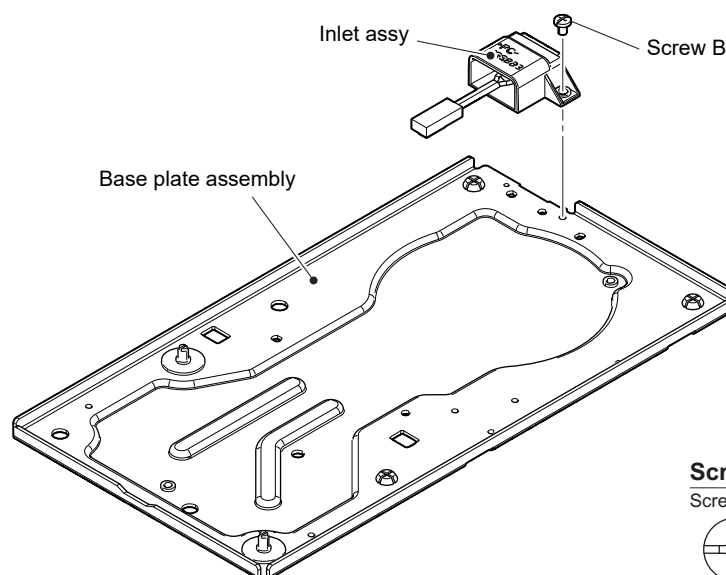
1. Disconnect the inlet lead wire from the power unit lead wire.
2. Remove the three screws A to remove the base plate assembly.

Screw A

Taprite, Bind S M4X10



3. Remove the screw B to remove the inlet assy from the base plate assembly.

**Screw B**

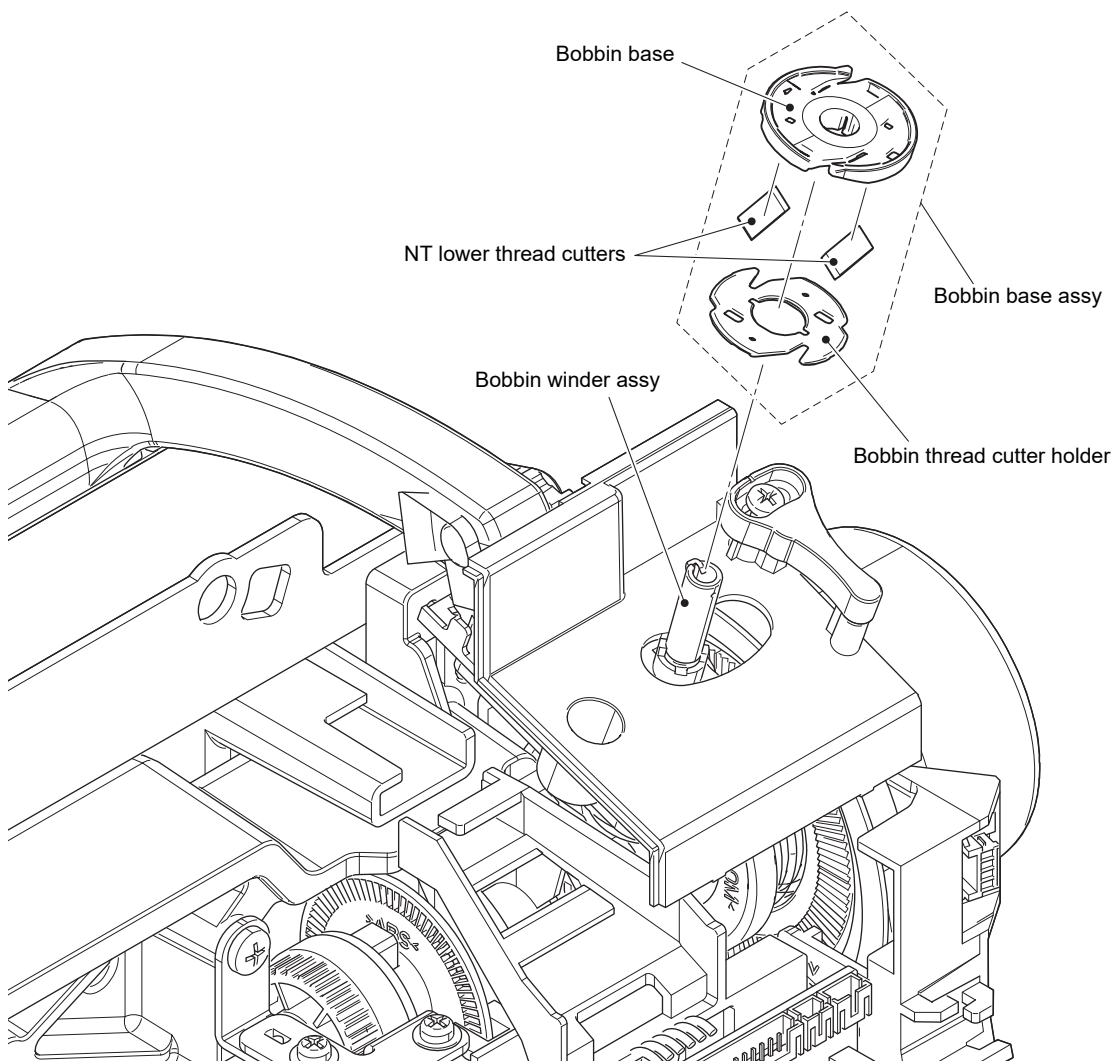
Screw, Bind M4X6



1. Remove the bobbin base assy from the bobbin winder assy.
2. Remove the bobbin thread cutter holder from the bobbin base.
3. Remove the two NT lower thread cutters from the bobbin base.

**Caution**

- When replacing the NT lower thread cutter is to be careful not to get hurt.



1. Cut the band to disconnect the BW SW assy lead wire from the main PCB assy, and release it from the securing fixtures.

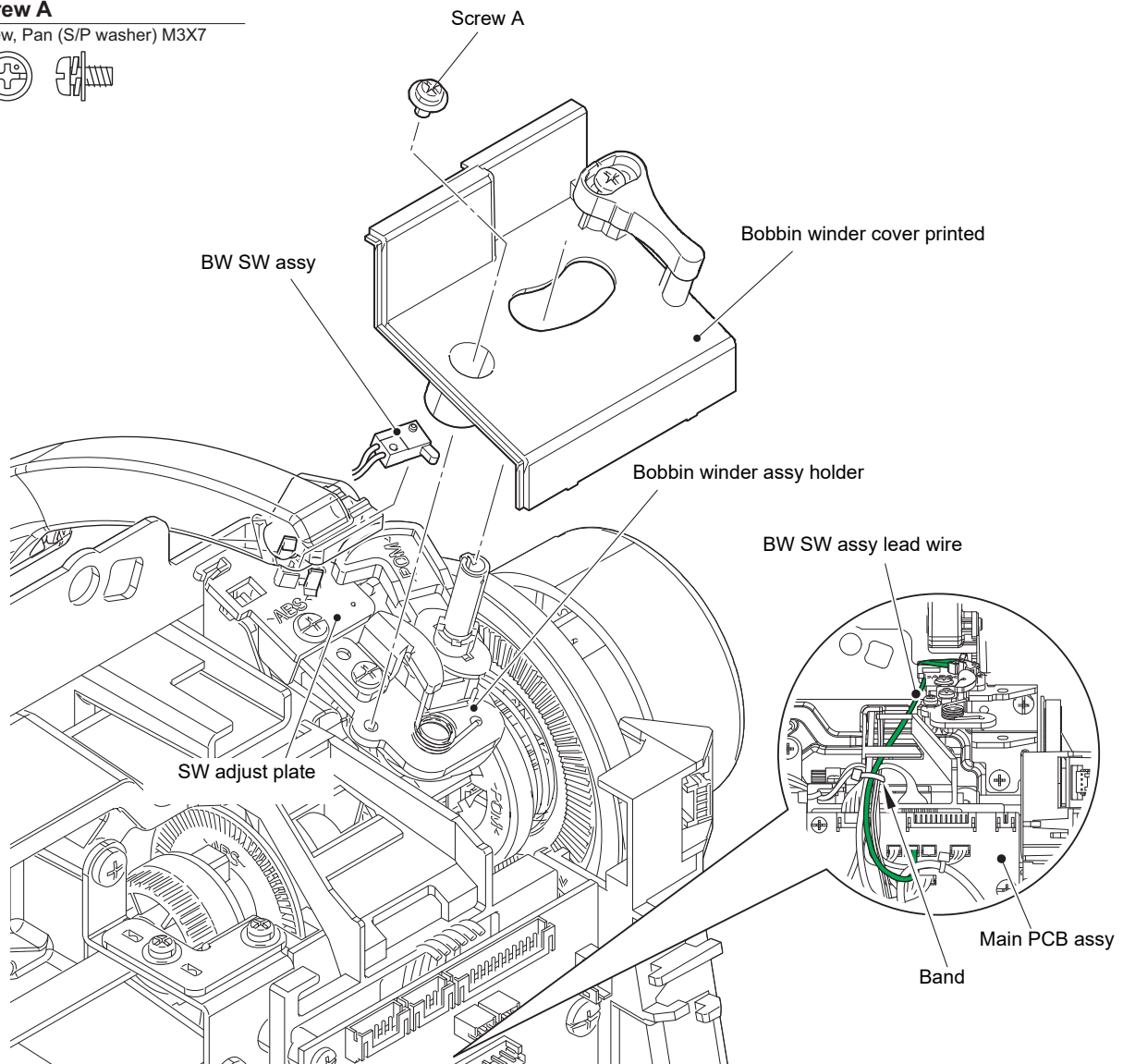
**Assembling note**

- Refer to "Wiring of Upper side of Main PCB".

2. Remove the screw A to remove the bobbin winder cover printed from the bobbin winder assy holder.
3. Release the two hooks to remove the BW SW assy from the SW adjust plate.

Screw A

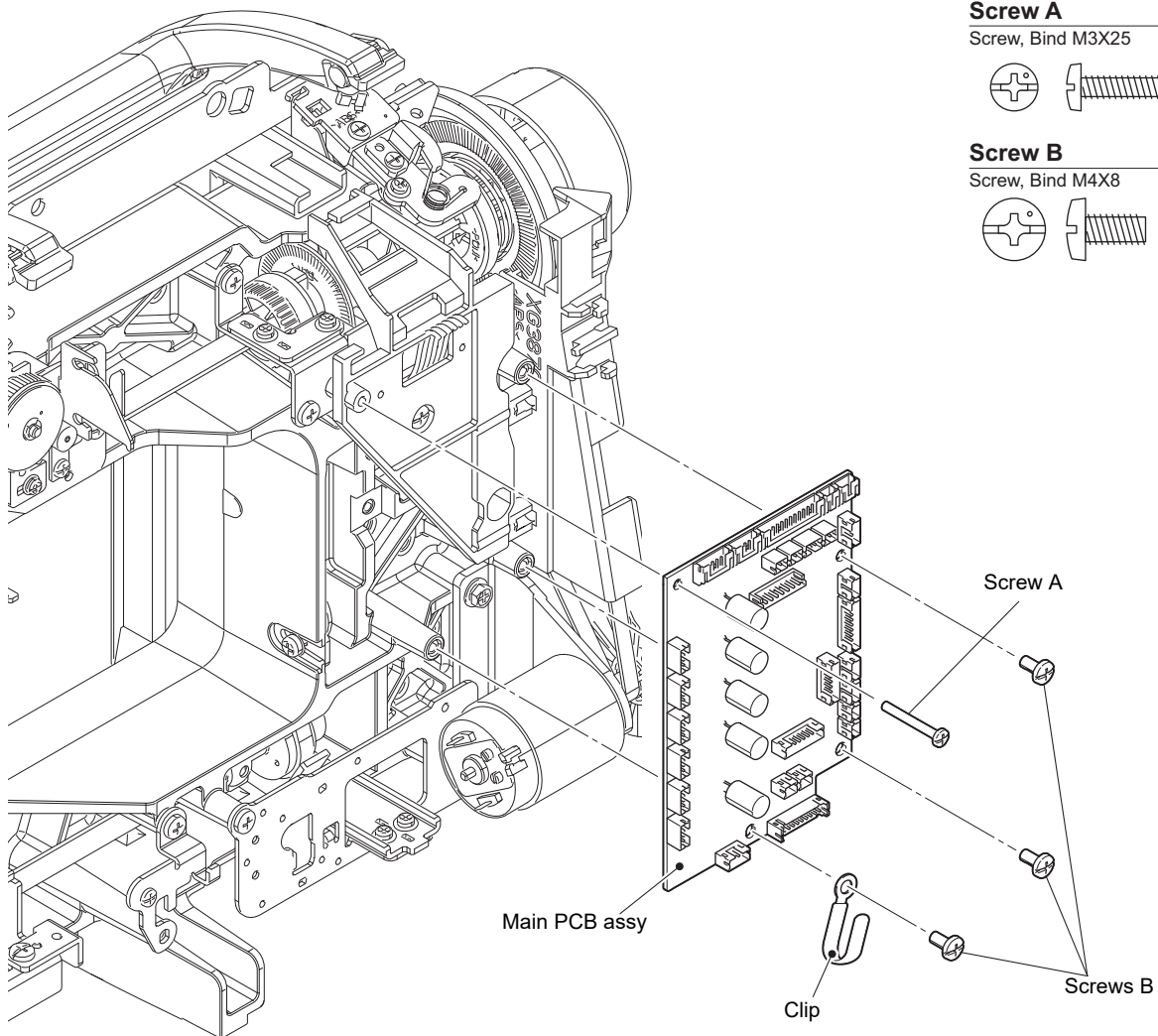
Screw, Pan (S/P washer) M3X7



1. Disconnect all connectors connected to the main PCB assy.
2. Remove the screw A and the three screws B to remove the clip and the main PCB assy.

**Assembling note**

- Refer to "Wiring of Lower side of Main PCB", "Wiring of Upper side of Main PCB".



1. Remove the timing belt from the timing pulley.

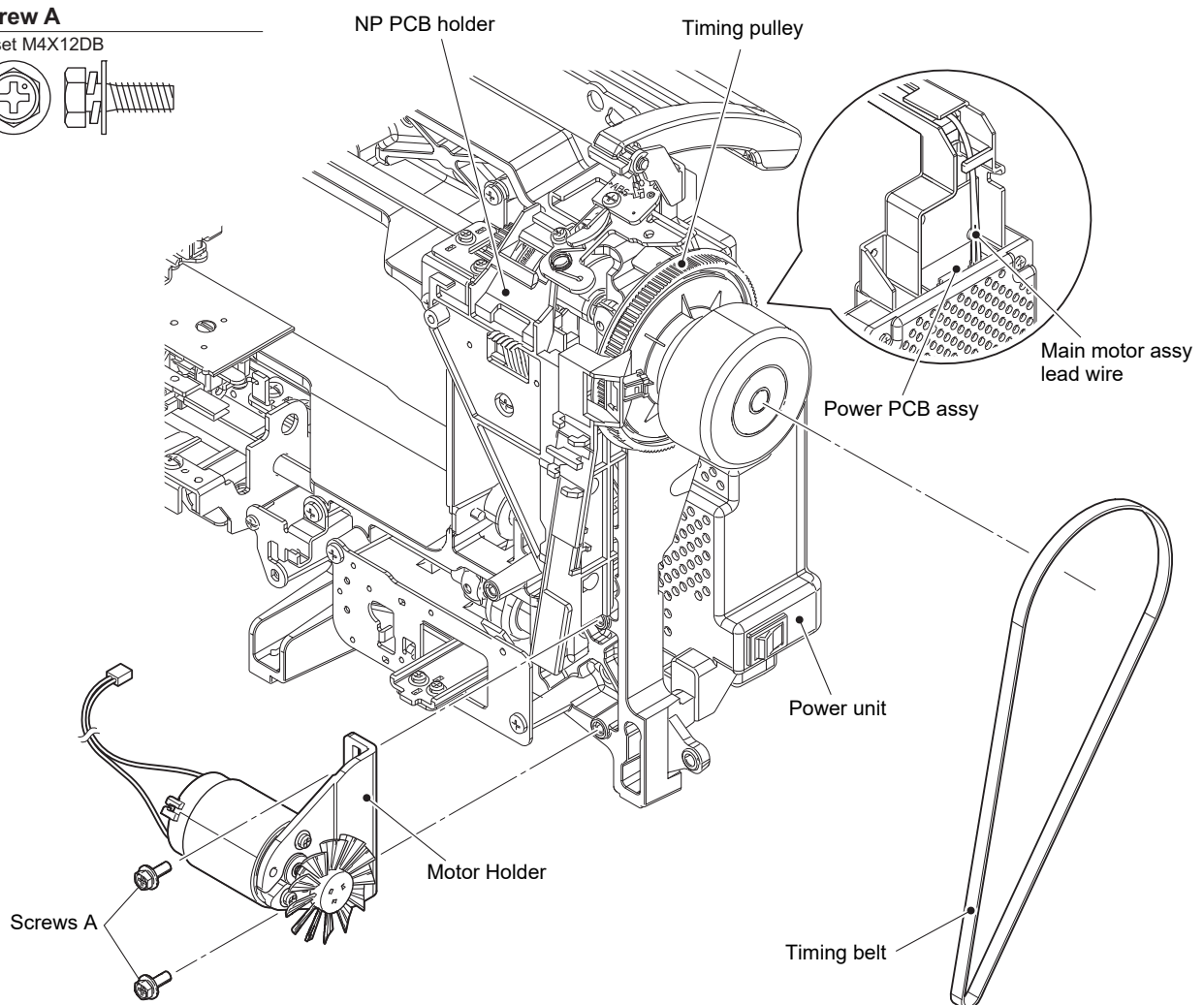
**Assembling note**

- Fully tighten the screw after performing "Adjustment of Motor belt tension".

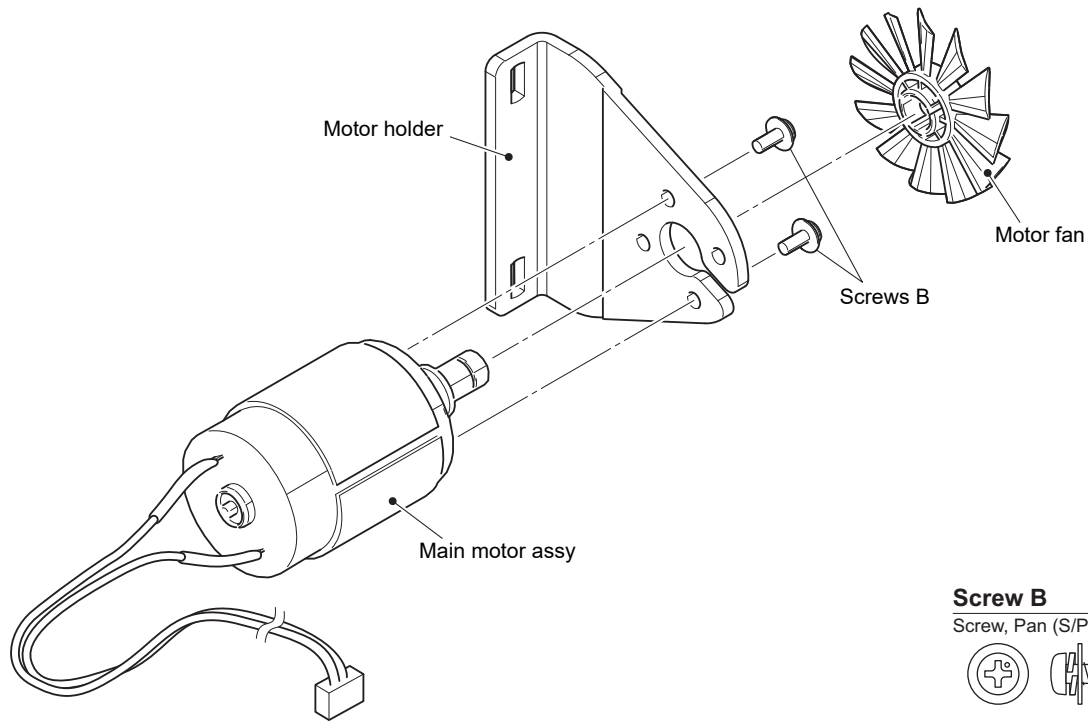
2. Disconnect the main motor assy lead wire from the power PCB assy of power unit, and release it from the securing fixtures.
3. Remove the two screws A to remove the motor holder.

Screw A

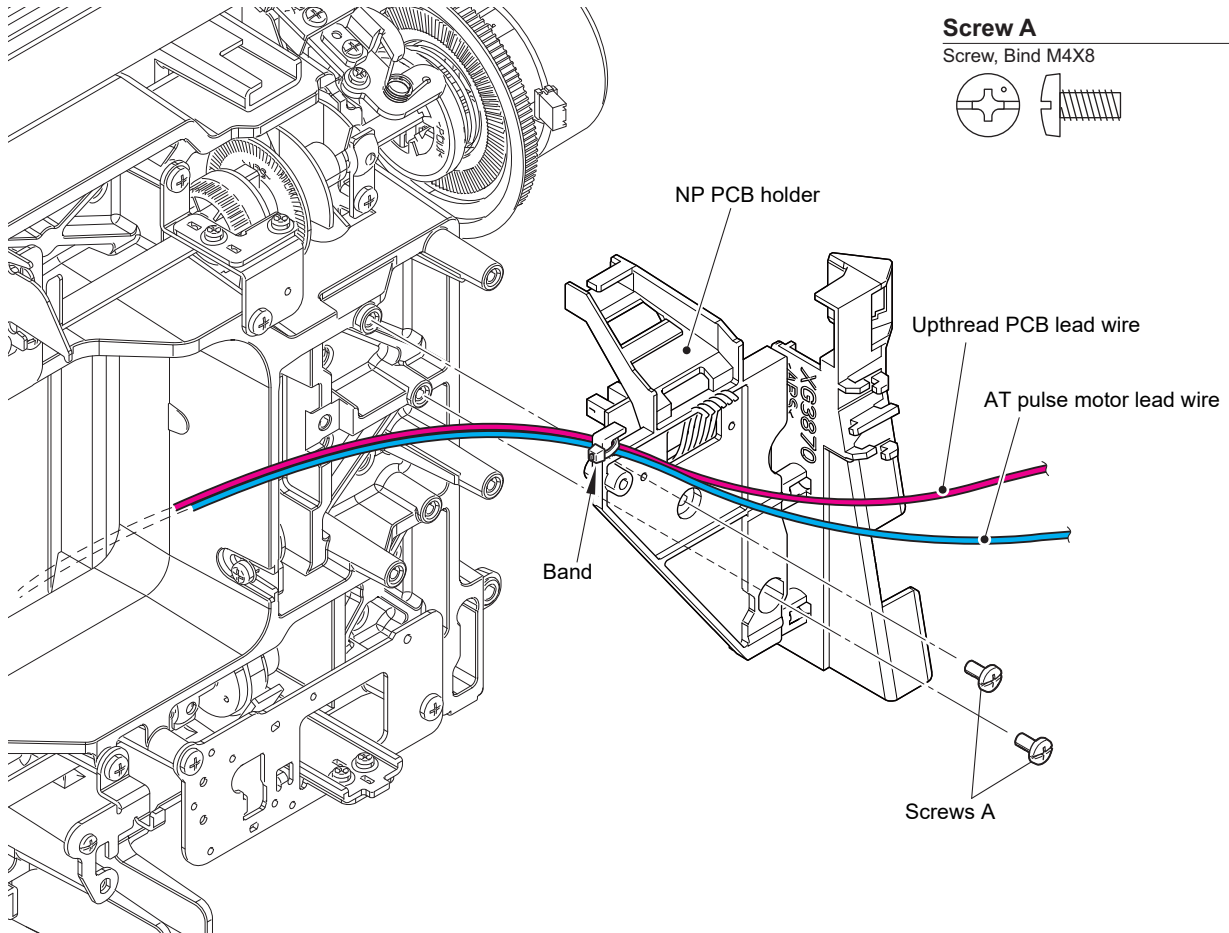
Upset M4X12DB



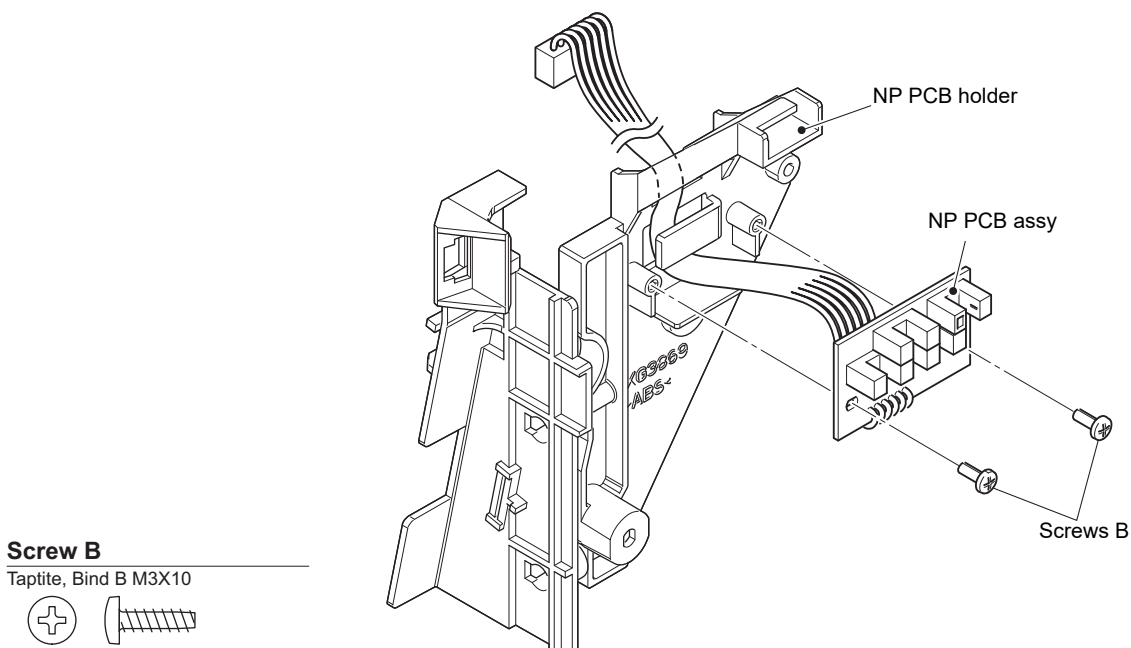
4. Remove the motor fan from the main motor assy.
5. Remove the two screws B to remove the main motor assy from the motor holder.



1. Cut the band to release the upthread PCB lead wire and the AT pulse motor lead wire.
2. Remove the two screws A to remove the NP PCB holder.



3. Remove the two screws B to remove the NP PCB assy from the NP PCB holder.



- 

- Refer to "Wiring of Power unit".



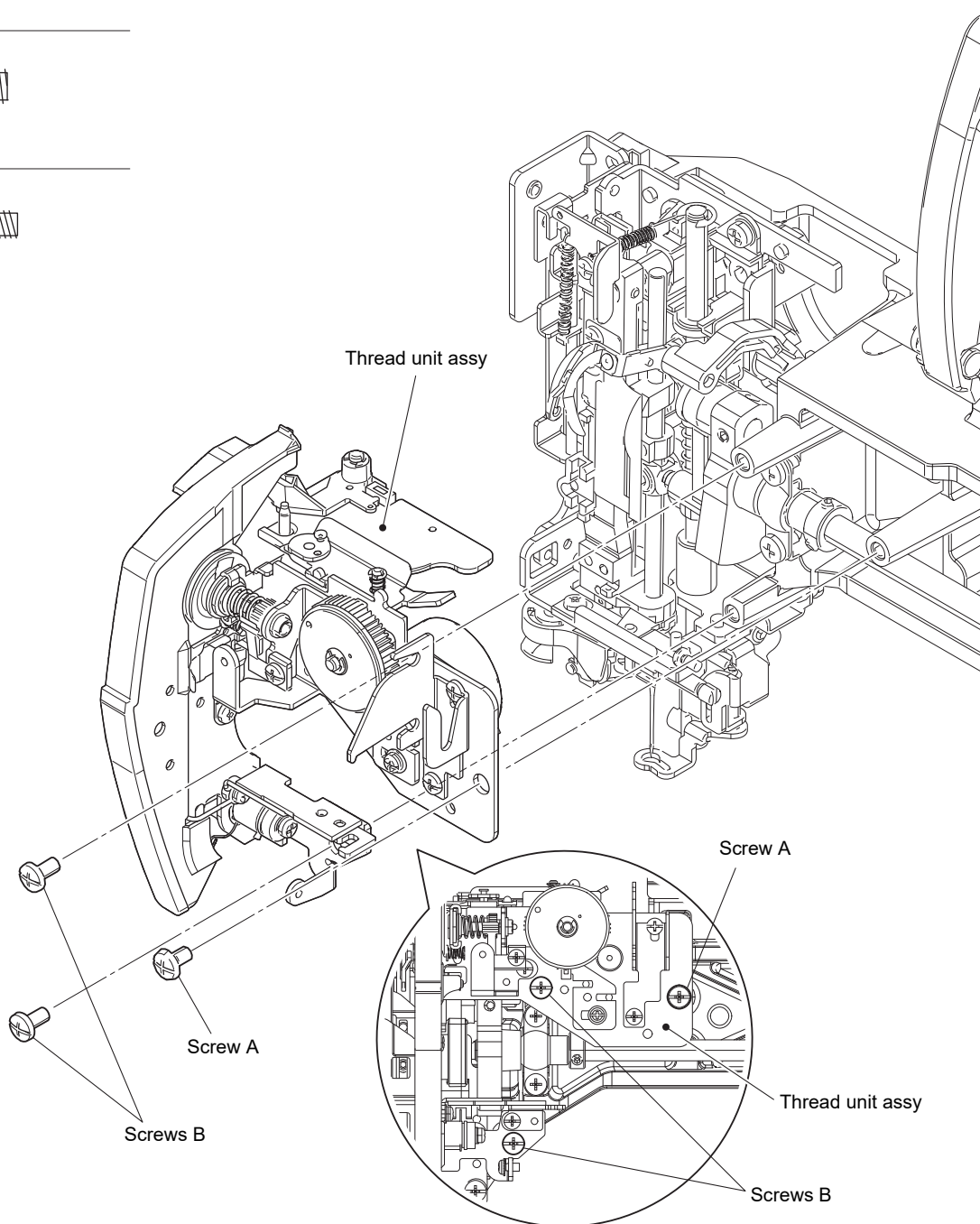
1. Remove the screw A and the two screws B to remove the thread unit assy.

Screw A

Stud screw M4

**Screw B**

Screw, Bind M4X8



1. Cut the band and release the AT pulse motor lead wire and the upthread PCB lead wire from the thread tension assy.

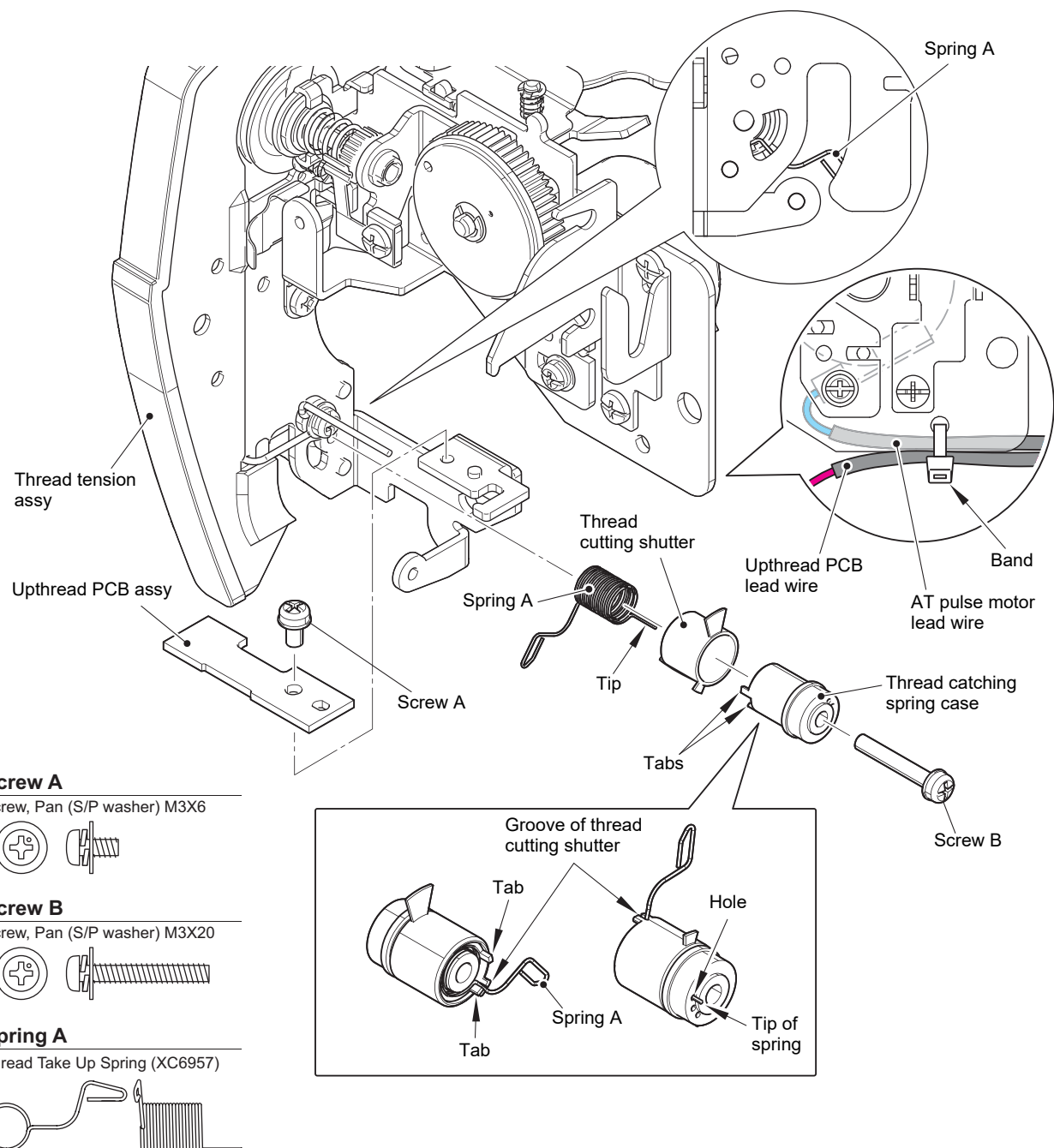
**Assembling note**

- Refer to "Wiring of Needle thread module".

2. Remove the screw A to remove the upthread PCB assy from the thread tension assy.
3. Remove the screw B to remove the thread catching spring case, the thread cutting shutter, and the spring A from the thread tension assy.

**Assembling note**

- Insert the tip of spring into the hole of thread catching spring case.
- Check that there is the groove of thread cutting shutter between the two tabs of thread catching spring case, and hang the spring on the groove of thread cutting shutter.

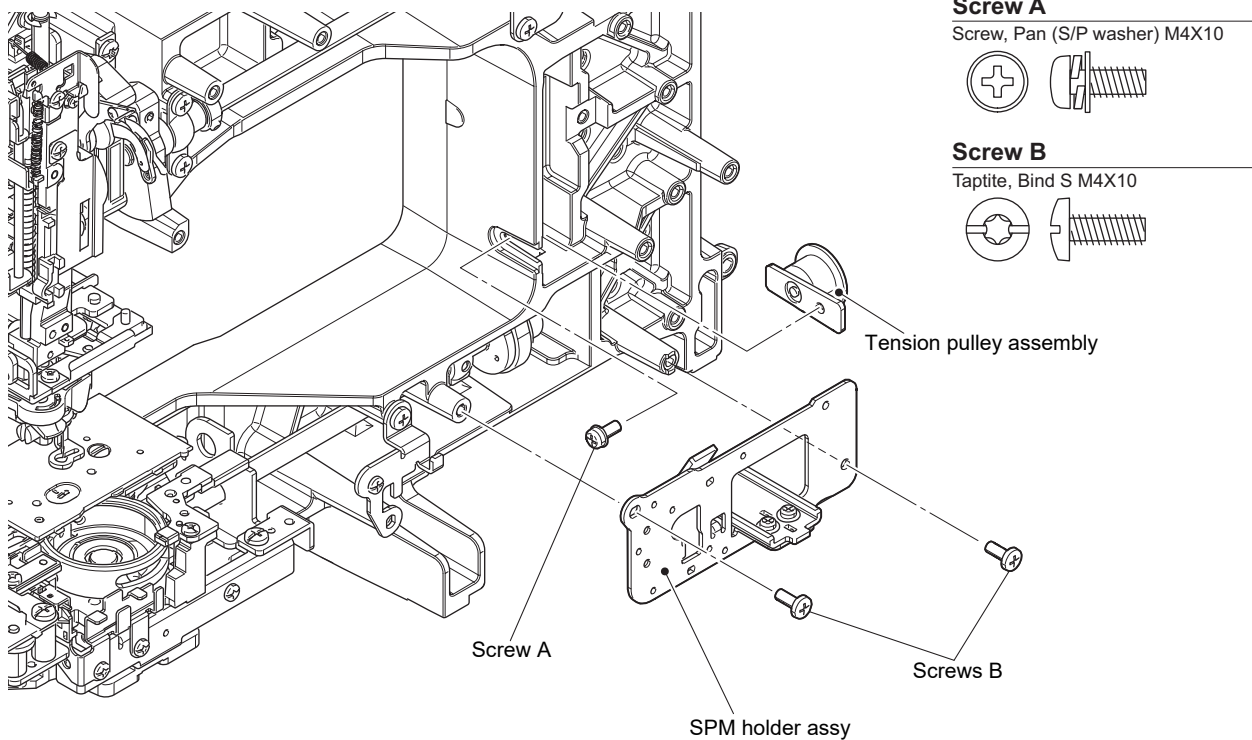


1. Remove the screw A to remove the tension pulley assembly.

**Disassembling note**

- To remove the feed module, the tension pulley assembly needs to be removed.

2. Remove the two screws B to remove the SPM holder assy.



1. Cut the band to release the lead wires from the securing fixtures of the free arm front cover plate.

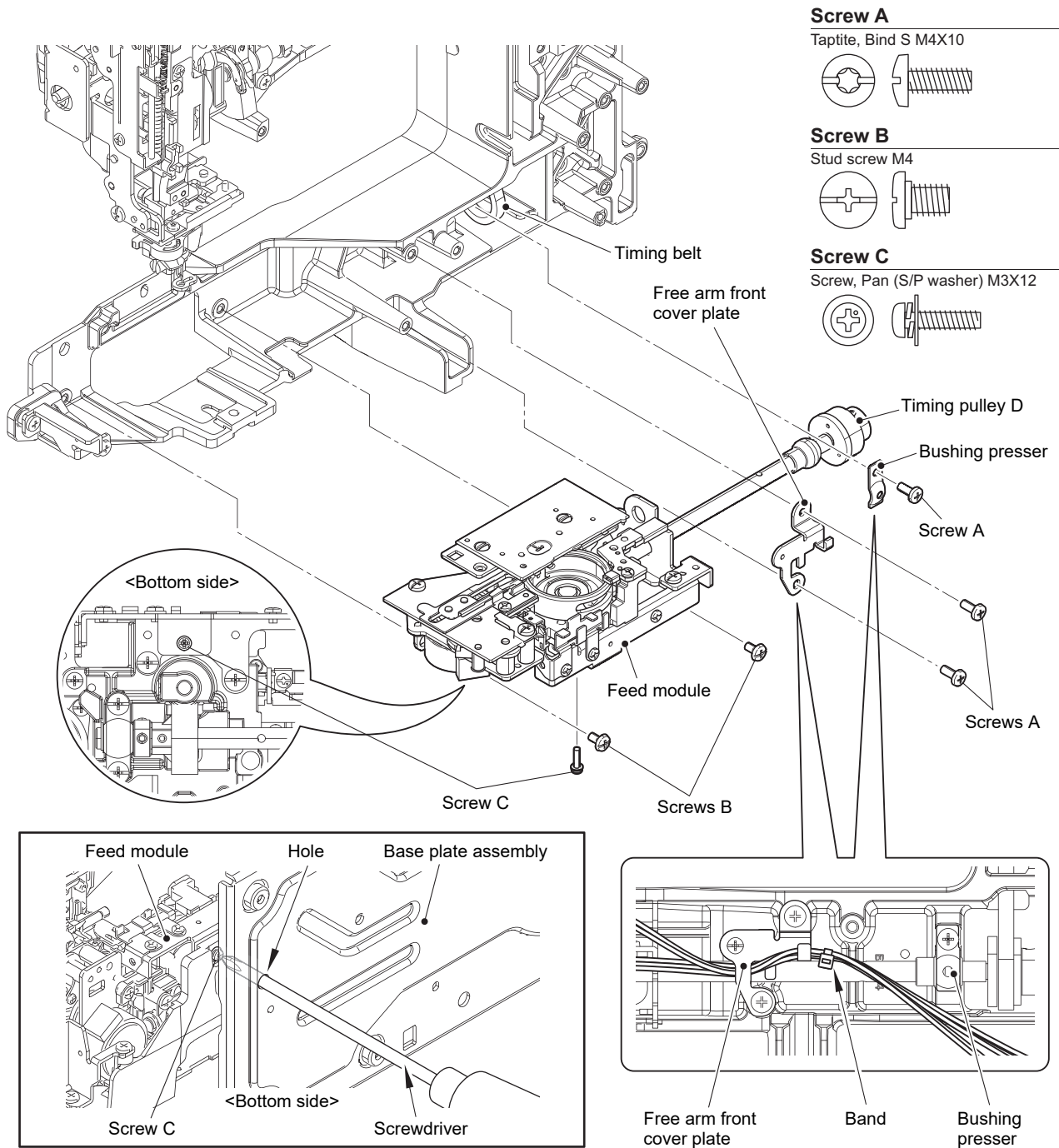
**Assembling note**

- Refer to "[Wiring of Thread cutter module / Feed module](#)".

2. Remove the two screws A to remove the free arm front cover plate.
3. Remove the screw A to remove the bushing presser.
4. Remove the two screws B and the screw C.
5. Remove the feed module, and release the timing belt from the timing pulley D.

**Disassembling note**

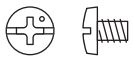
- The feed module can be removed even when the base plate assembly is attached. (Fig.1)



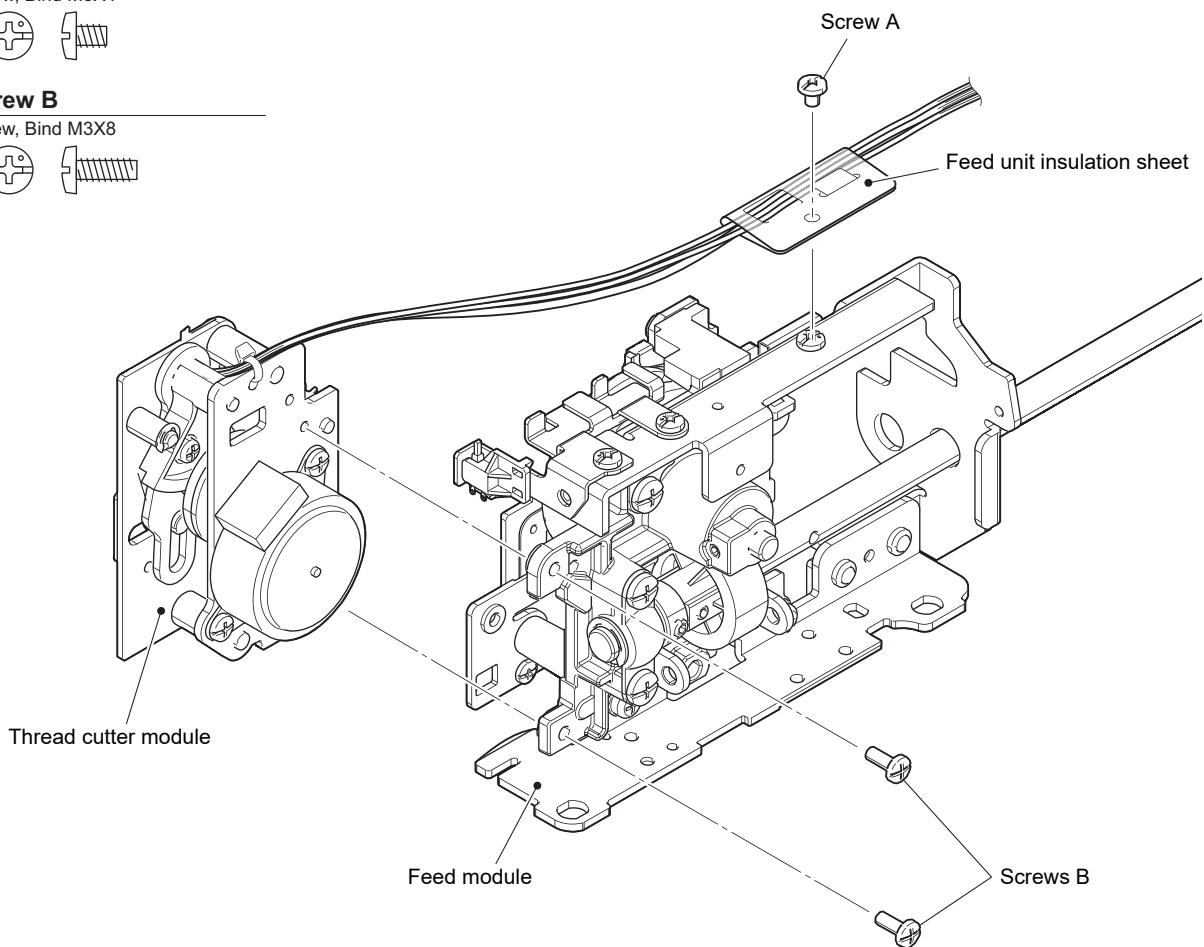
1. Remove the screw A to remove the feed unit insulation sheet.
2. Release the lead wires from the feed unit insulation sheet, and release it from the securing fixtures.
3. Remove the two screws B to remove the thread cutter module from the feed module.

Screw A

Screw, Bind M3X4

**Screw B**

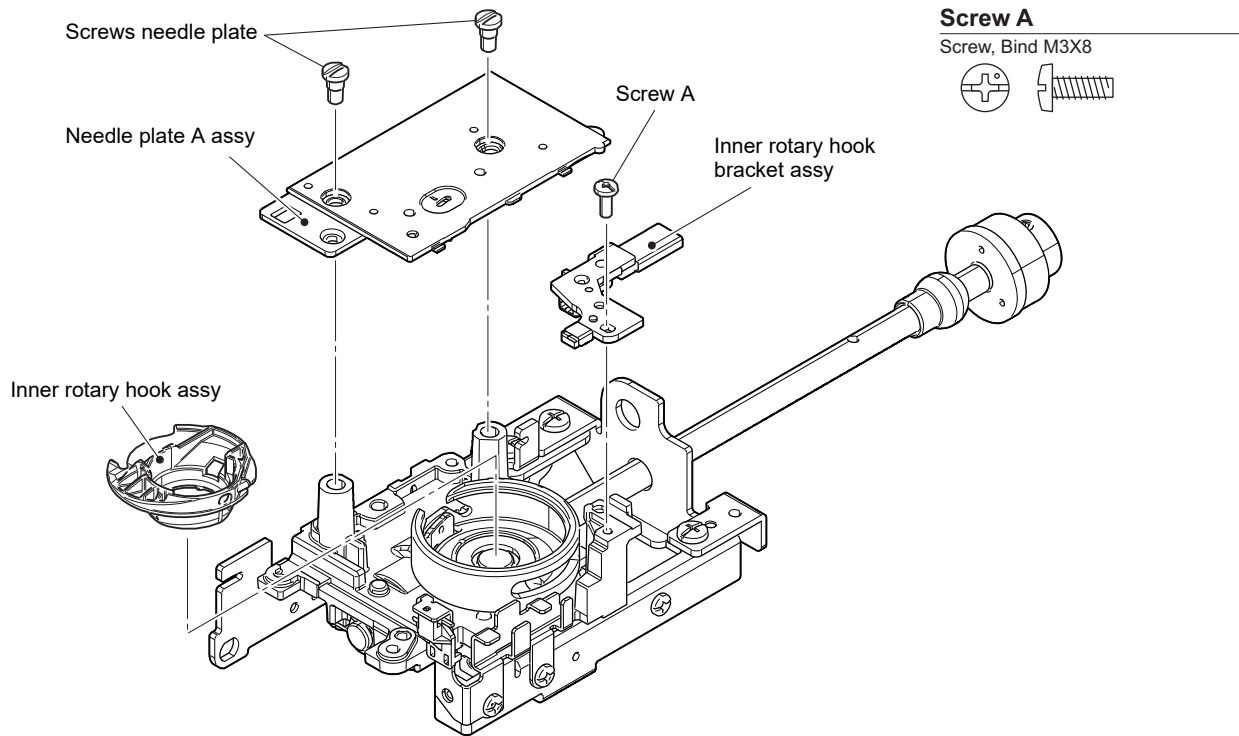
Screw, Bind M3X8



1. Remove the inner rotary hook assy.
2. Remove the two screws needle plate to remove the needle plate A assy.
3. Remove the screw A to remove the inner rotary hook bracket assy.

**Assembling note**

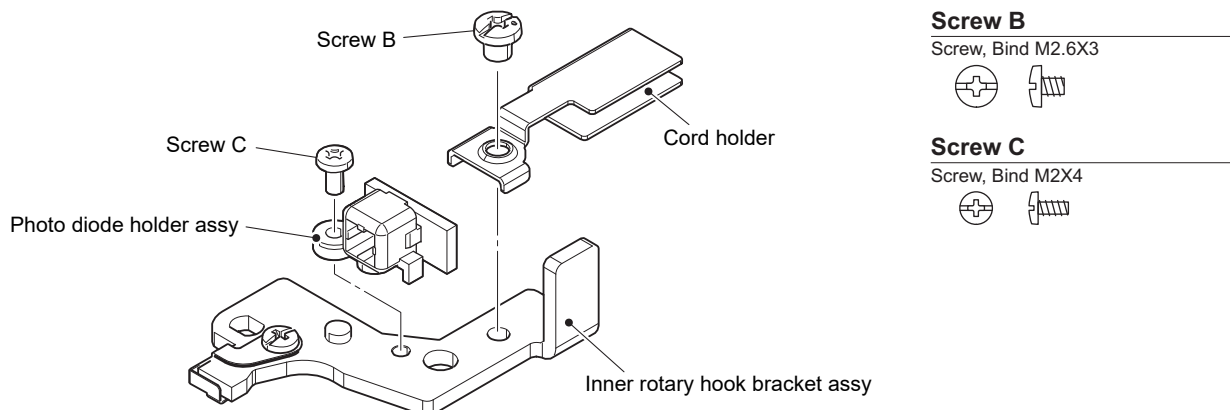
- Fully tighten the screw after performing "[Adjustment of Inner rotary hook bracket position](#)".
- Refer to "[Wiring of Feed module](#)".



4. Remove the screw B to remove the cord holder from the inner rotary hook bracket assy.
5. Remove the screw C to remove the photo diode holder assy from the inner rotary bracket assy.

**Assembling note**

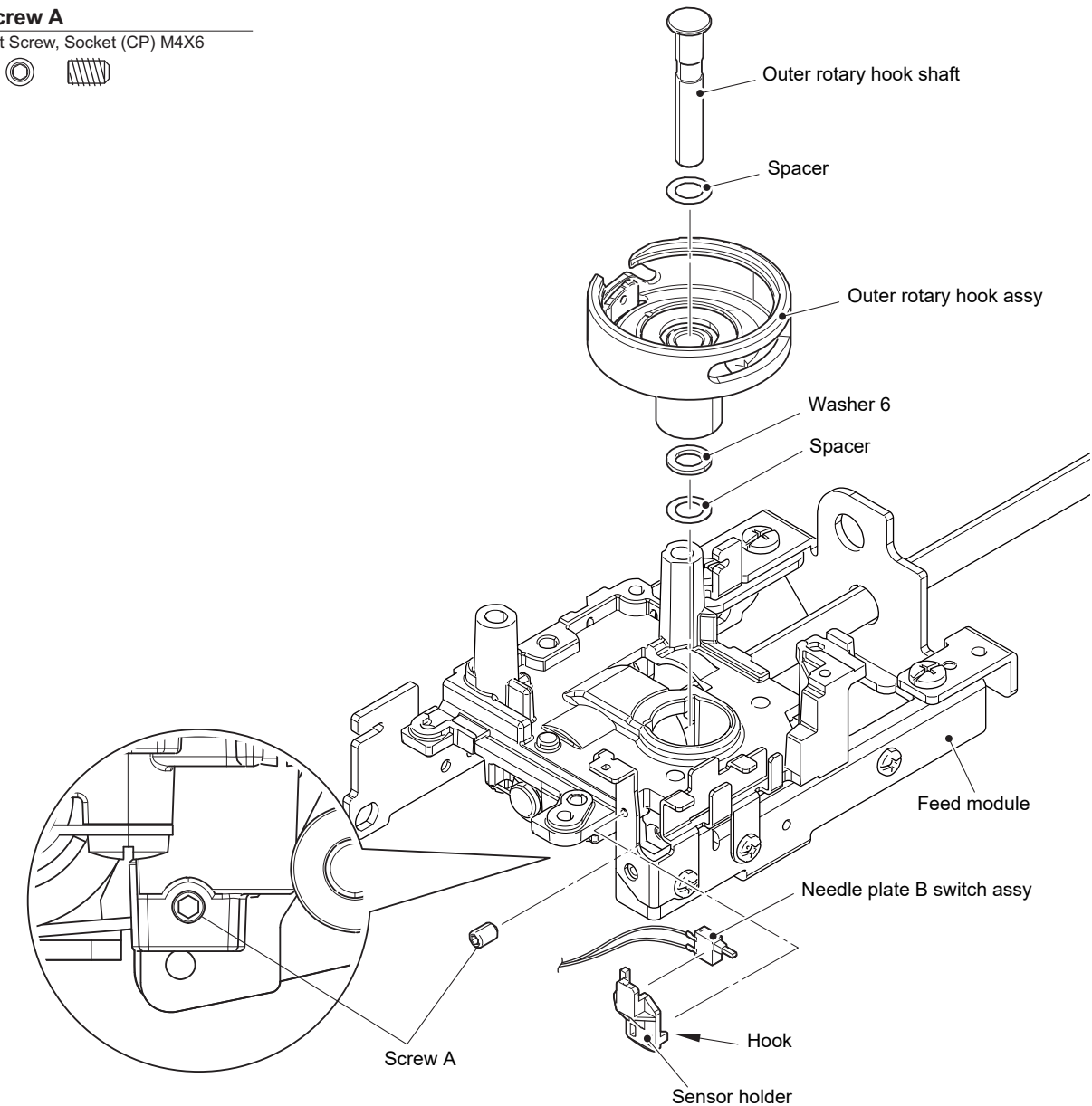
- Refer to "[Wiring of Feed module](#)".



1. Remove the screw A, and then pull out the outer rotary hook shaft to remove the spacer, the outer rotary hook assy, the washer 6, and the spacer.
2. Release the hook to remove the sensor holder from the feed module, and release it from the securing fixtures.
3. Remove the needle plate B switch assy from the sensor holder.

Screw A

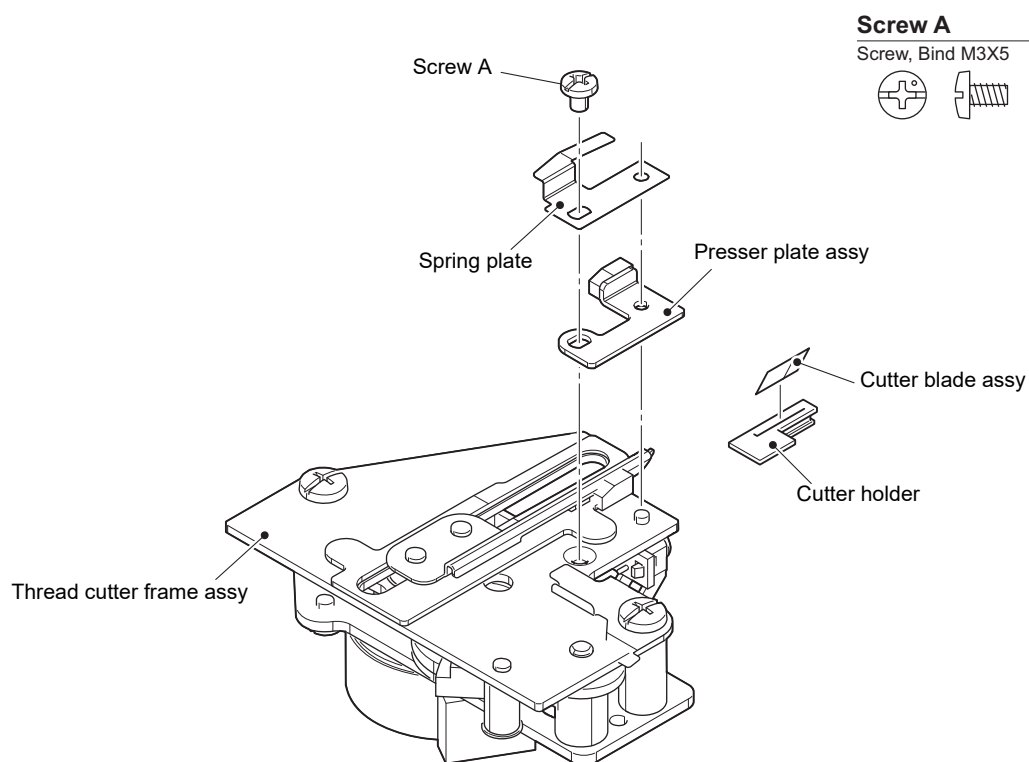
Set Screw, Socket (CP) M4X6



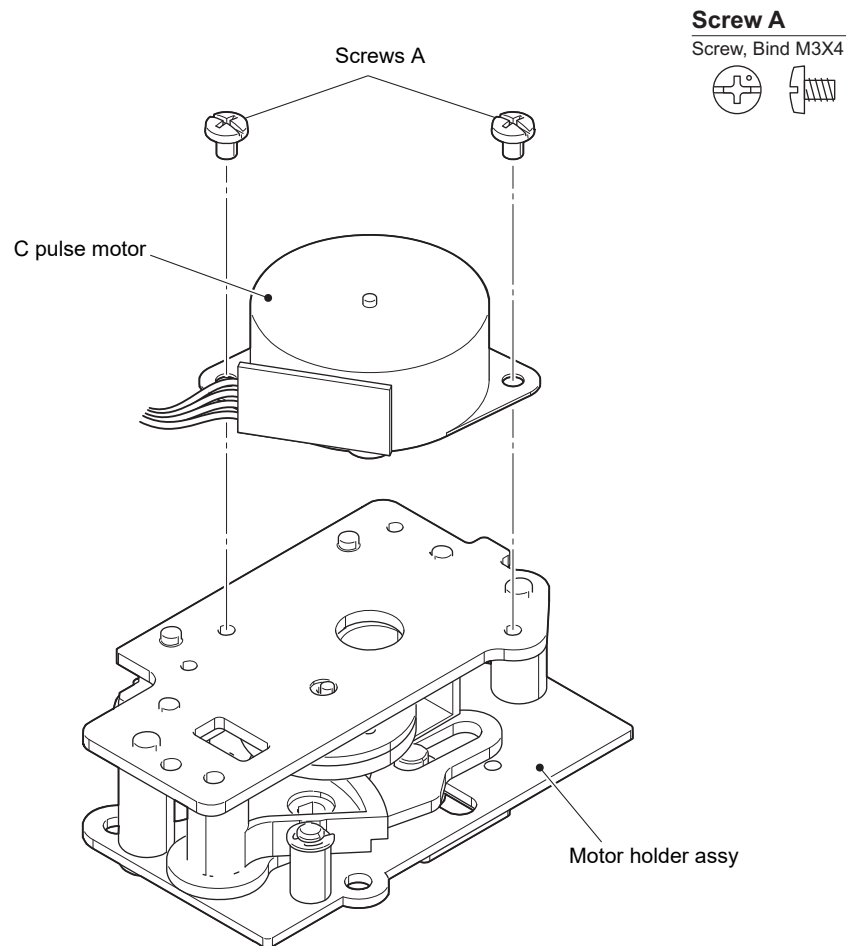
1. Remove the screw A to remove the spring plate and the presser plate assy from the thread cutter frame assy.
2. Remove the cutter holder from thread cutter frame assy to remove the cutter blade assy from cutter holder.

**Caution**

- When replacing the cutter blade assy is to be careful not to get hurt.



1. Remove the two screws A to remove the C pulse motor from the motor holder assy.



1. Remove the two screws A to remove the belt support upper adjust from the belt support upper.
2. Remove the two screws B to remove the belt support upper.
3. Remove the three screws C to remove the bushing presser and the bushing presser A.
4. Remove the two screws D from the thread take-up counter weight. Lift the upper shaft assy, and pull out the thread take-up counter weight from the needle bar crank to remove the upper shaft assy and the washer.

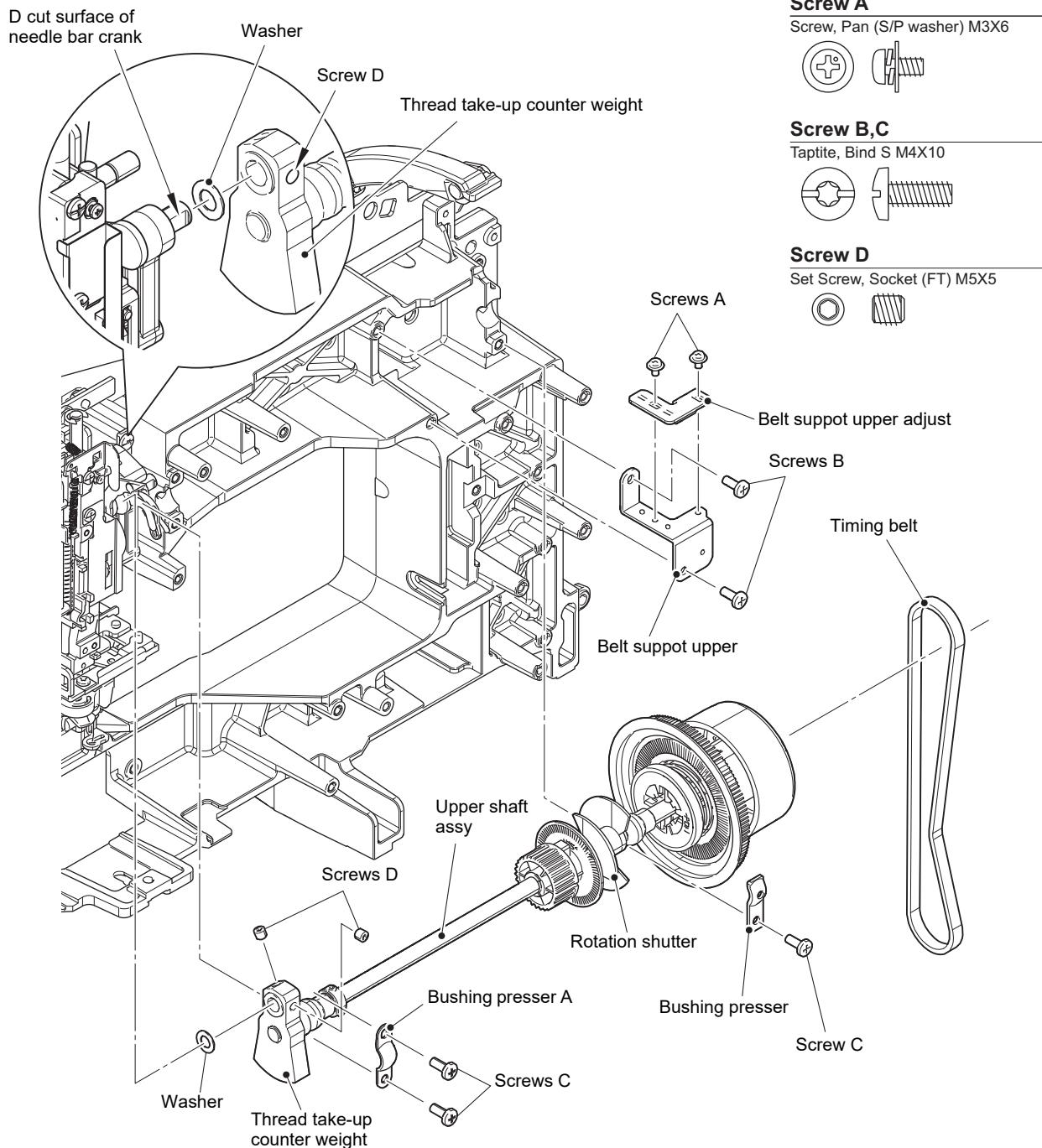
**Assembling note**

- Check that the screw D with the D cut surface of the needle bar crank.

5. Remove the timing belt from the upper shaft assy.

**Assembling note**

- Be careful not to damage the rotation shutter of the upper shaft assy.



1. Remove the screw A to remove the clamp.
2. Release the lead sub assy PFSW from the rear cover plate.

**Assembling note**

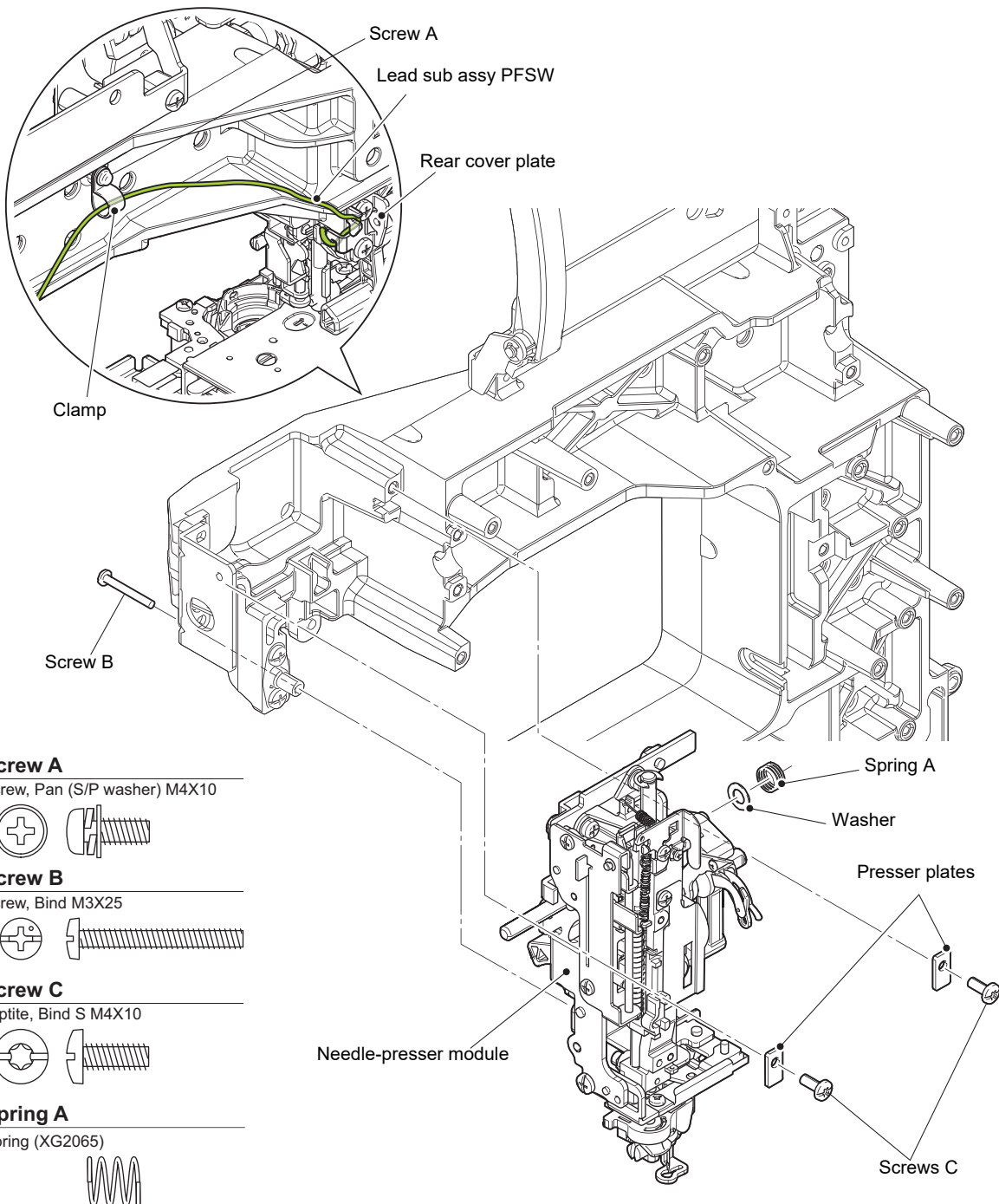
- Refer to "[Wiring of Presser module](#)"

3. Remove the screw B.

**Assembling note**

- Fully tighten the screw after performing "[Adjustment of Needle clearance](#)".

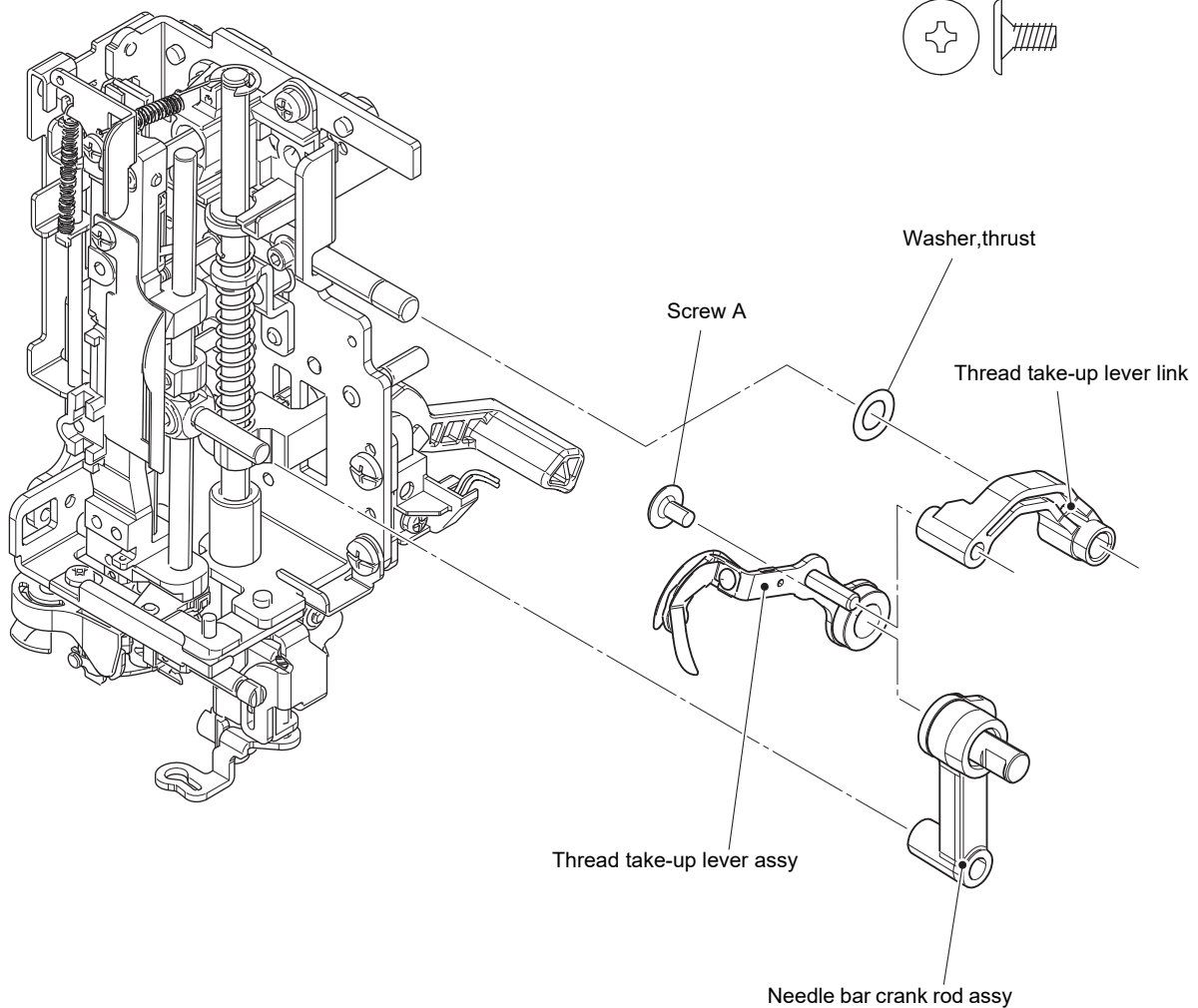
4. Remove the two screws C to remove the two presser plates.
5. Remove the needle-presser module. Remove the spring A and the washer from the needle-presser module.



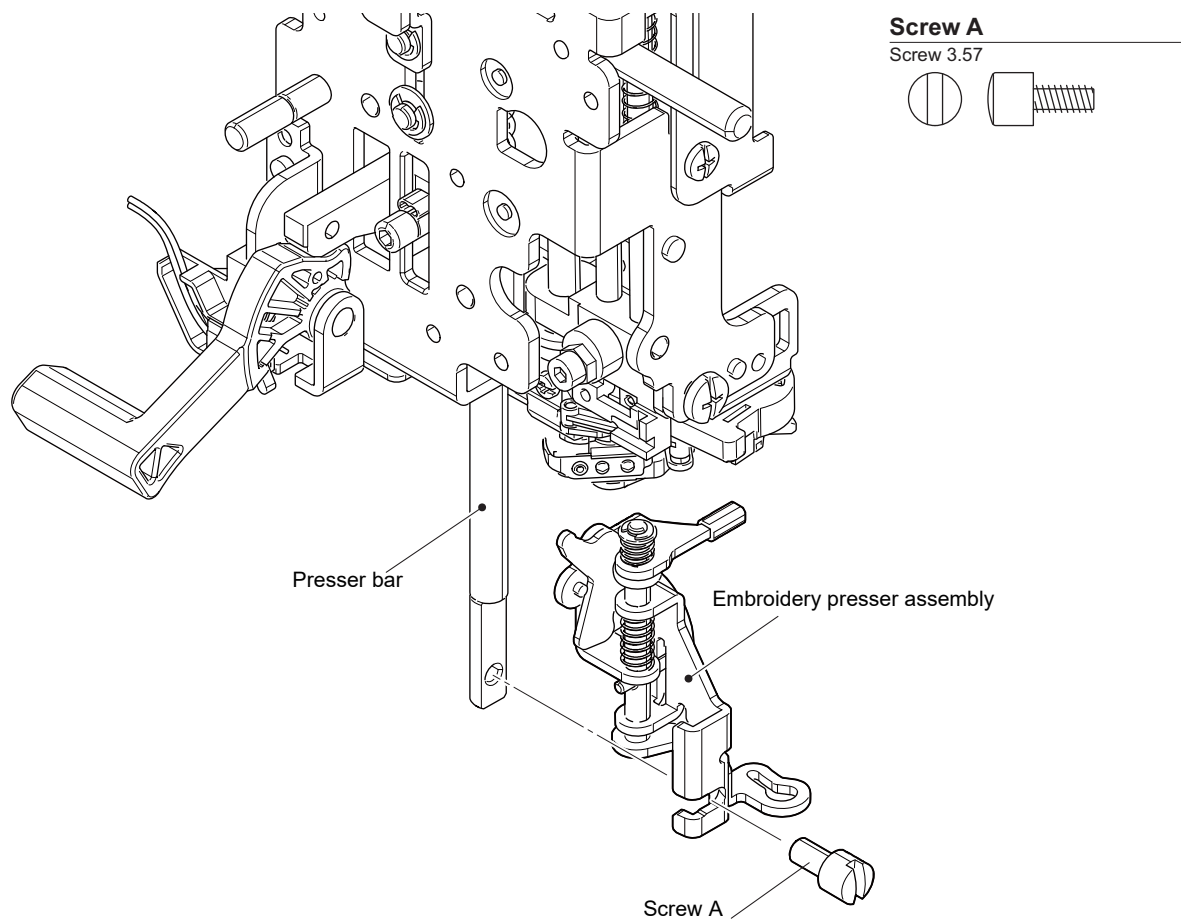
1. Remove the thread take-up lever link and the washer,thrust.
2. Remove the thread take-up lever assy and the needle bar crank rod assy.
3. Remove the screw A to remove the thread take-up lever assy from the needle bar crank rod assy.

**Assembling note**

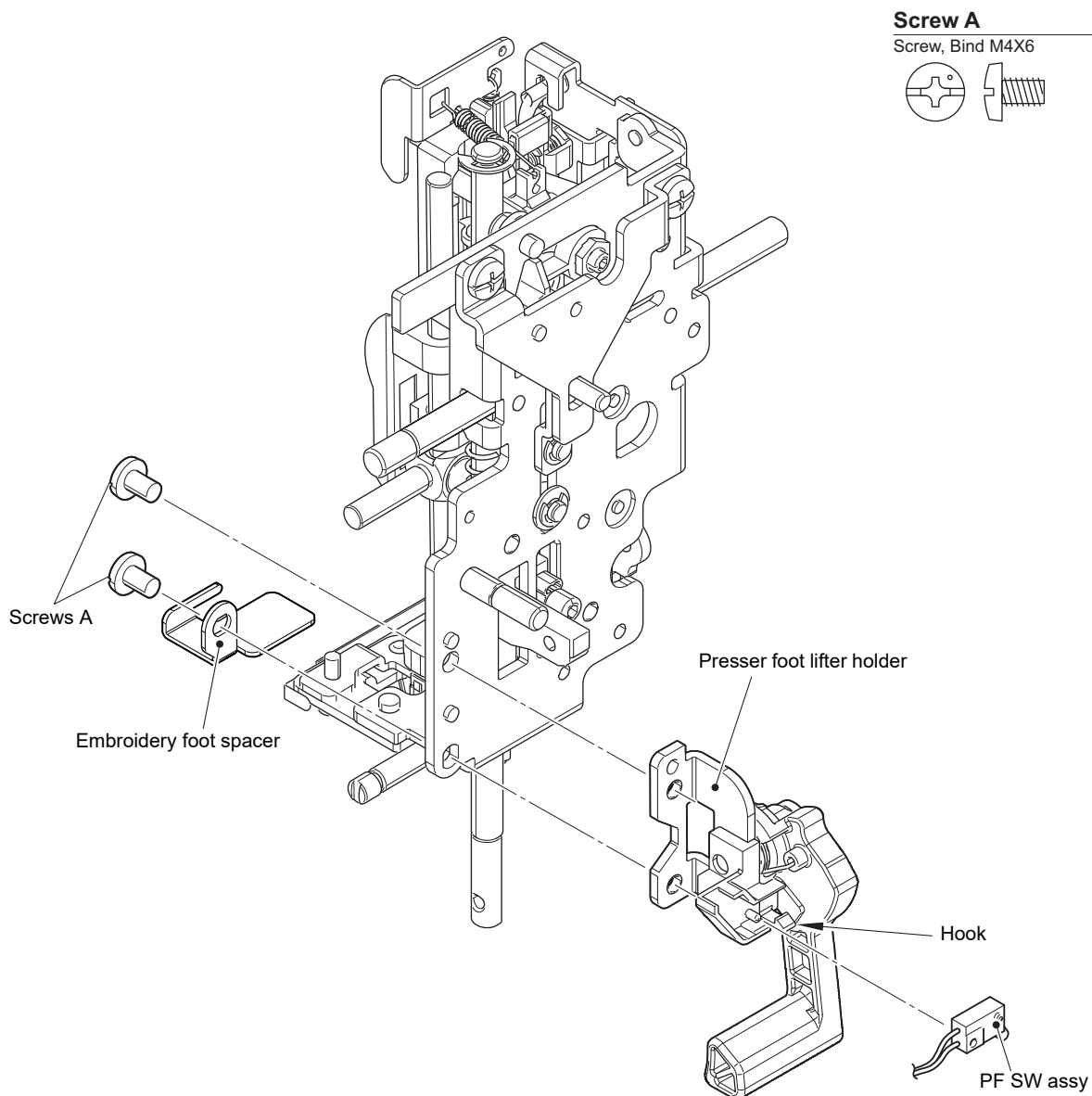
- Tighten the screw A by turning it anti-clockwise.



1. Remove the screw A to remove the embroidery presser assembly from the presser bar.



1. Remove the two screws A to remove the embroidery foot spacer and the presser foot lifter holder.
2. Release the hook to remove the PF SW assy from the presser foot lifter holder.



1. Remove the two screws A from the needle thread block and the needle bar block. Pull out the needle bar to remove the needle thread block and the needle bar block.

**Assembling note**

- Fully tighten the screw after performing "[Adjustment of Needle bar height](#)".

2. Remove the needle clamp screw from the needle block. Remove the screw B to remove the needle thread guide spring and the needle bar thread guide Q from the needle bar. Remove the needle thread plate and the needle block from the needle bar.

**Assembling note**

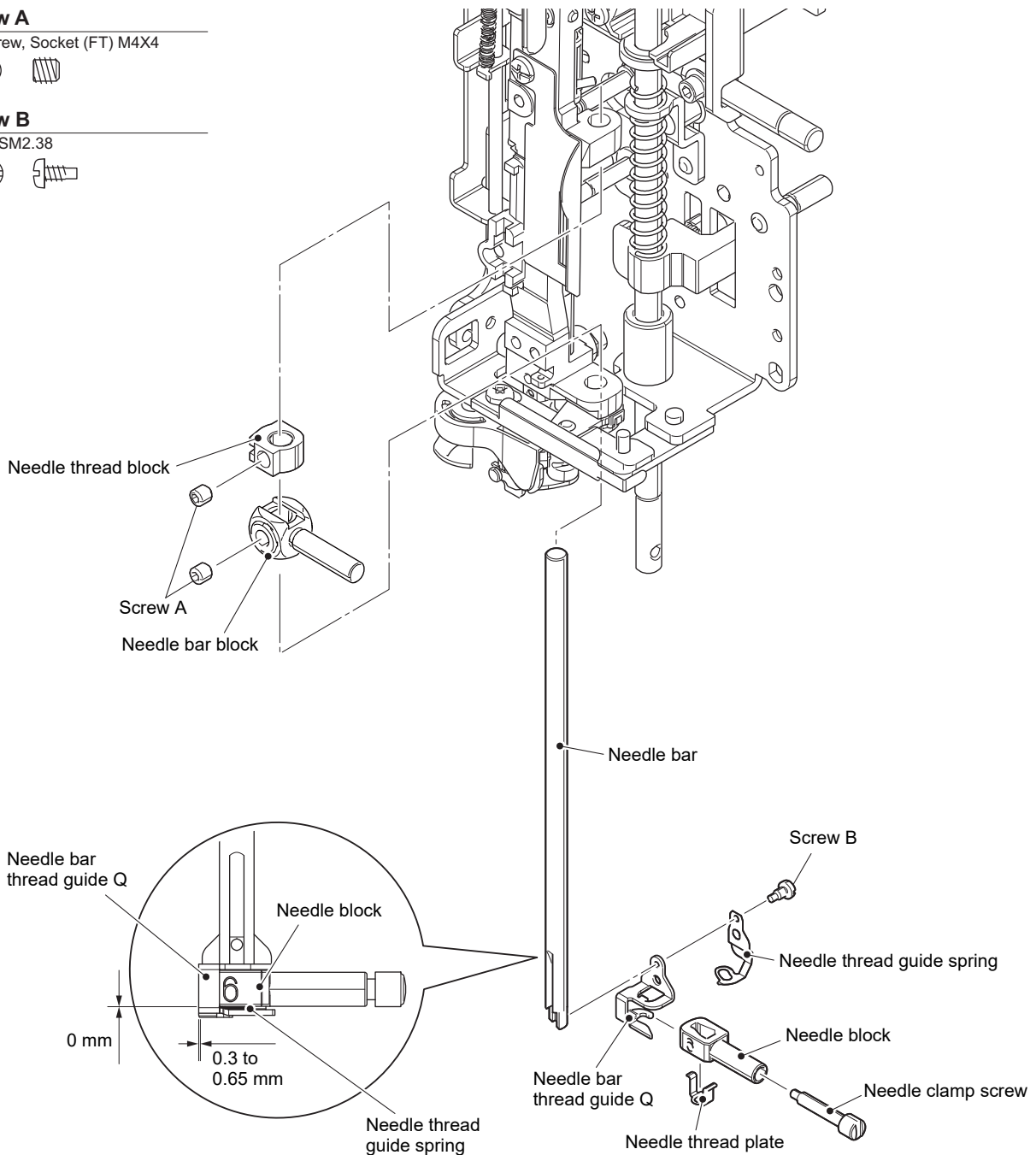
- Make sure that there is 0 mm gap between the needle bar thread guide Q and the needle thread guide spring.
- Make sure that there is 0.3 to 0.65 mm gap between the needle block and the right side of needle bar thread guide Q.

Screw A

Set Screw, Socket (FT) M4X4

**Screw B**

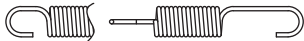
Screw SM2.38



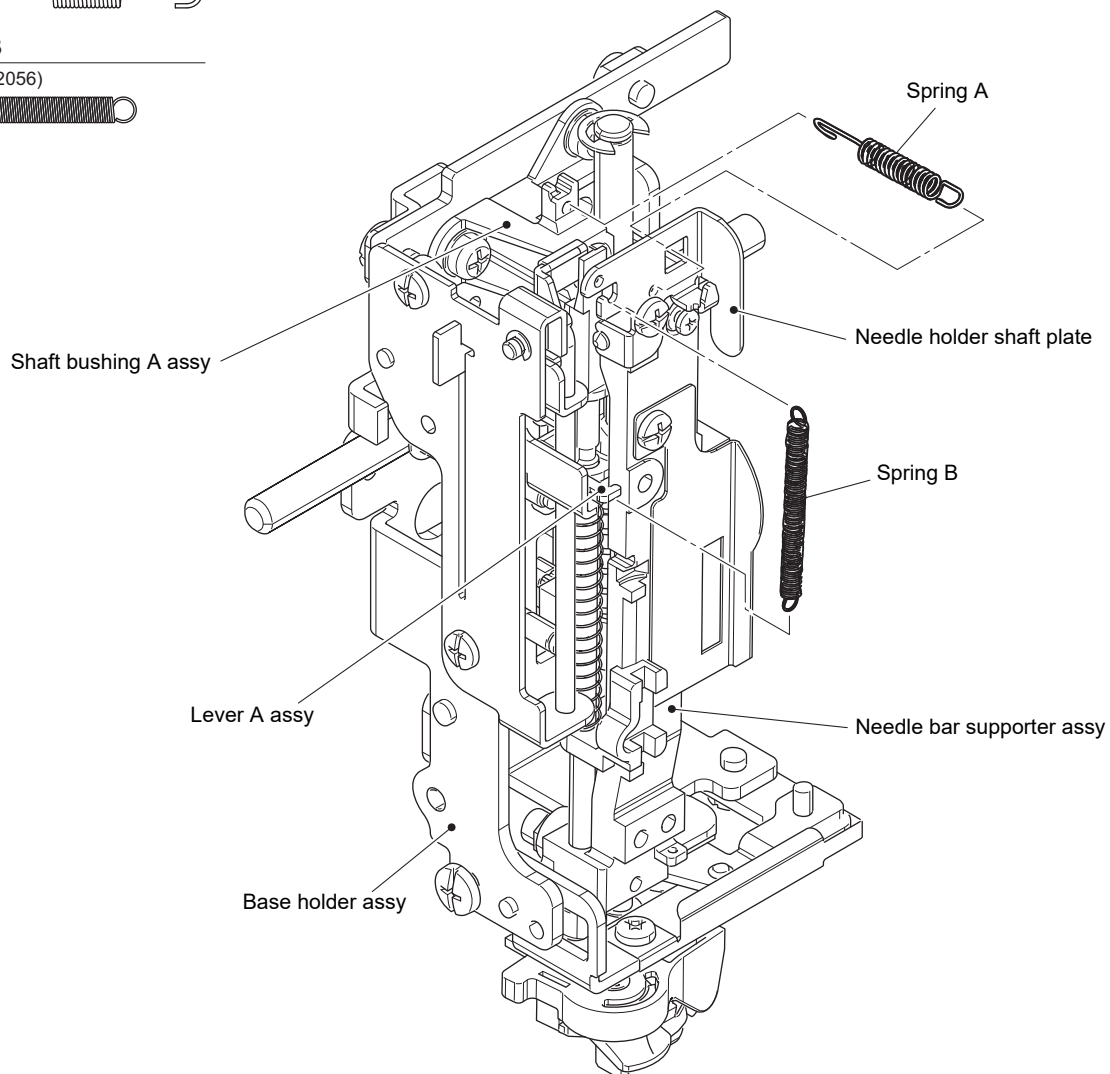
1. Remove the spring A from the needle holder shaft plate and the shaft bushing A assy.
2. Remove the spring B from the needle holder shaft plate and the lever A assy.

Spring A

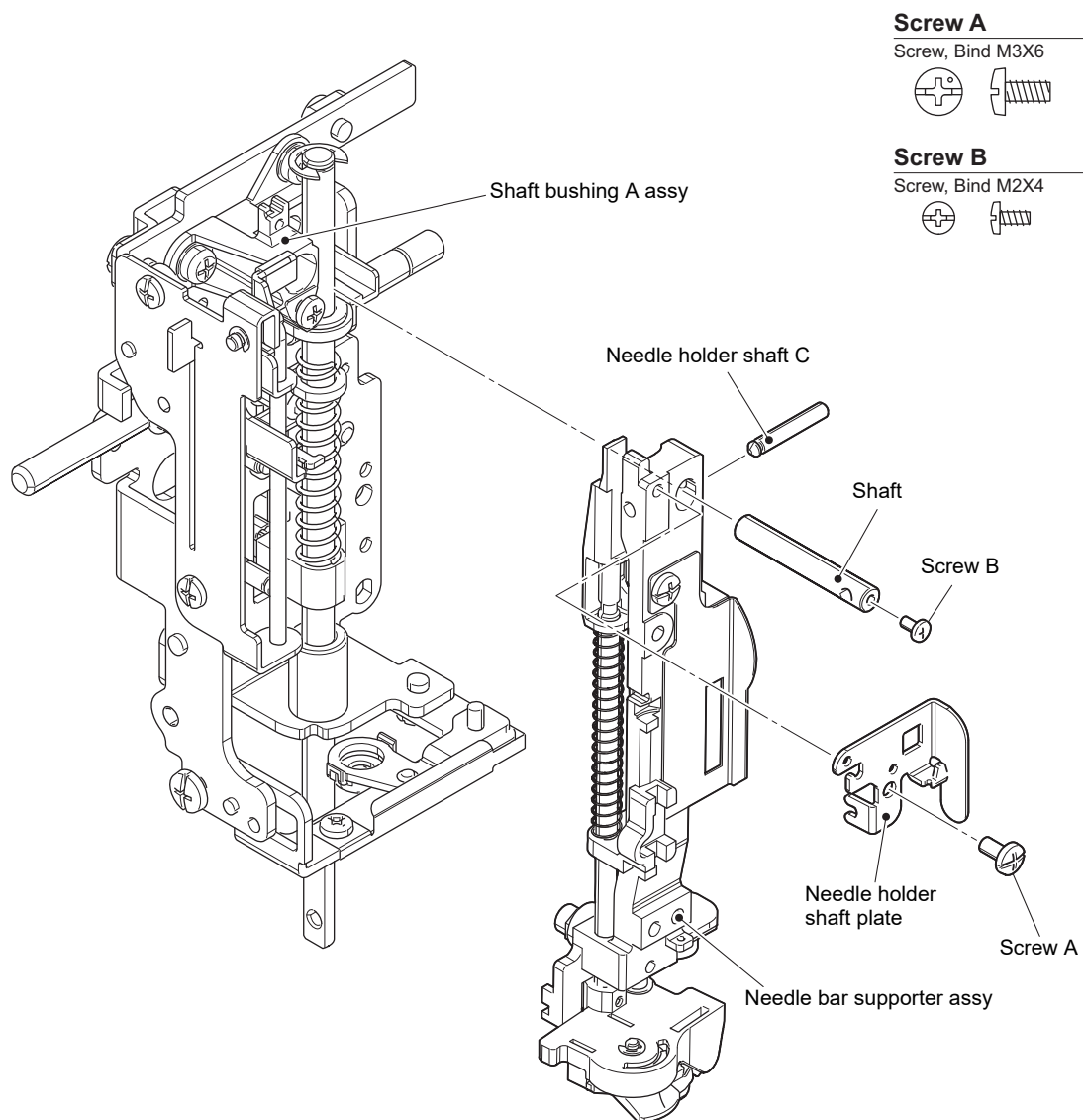
Spring (XC2429)

**Spring B**

Spring (XG2056)



3. Remove the needle bar supporter assy.
4. Remove the screw A to remove the needle holder shaft plate from the needle bar supporter assy.
5. Remove the screw B from the shaft. Pull out the needle holder shaft C from the needle bar supporter assy.
6. Remove the shaft from the needle bar supporter assy.



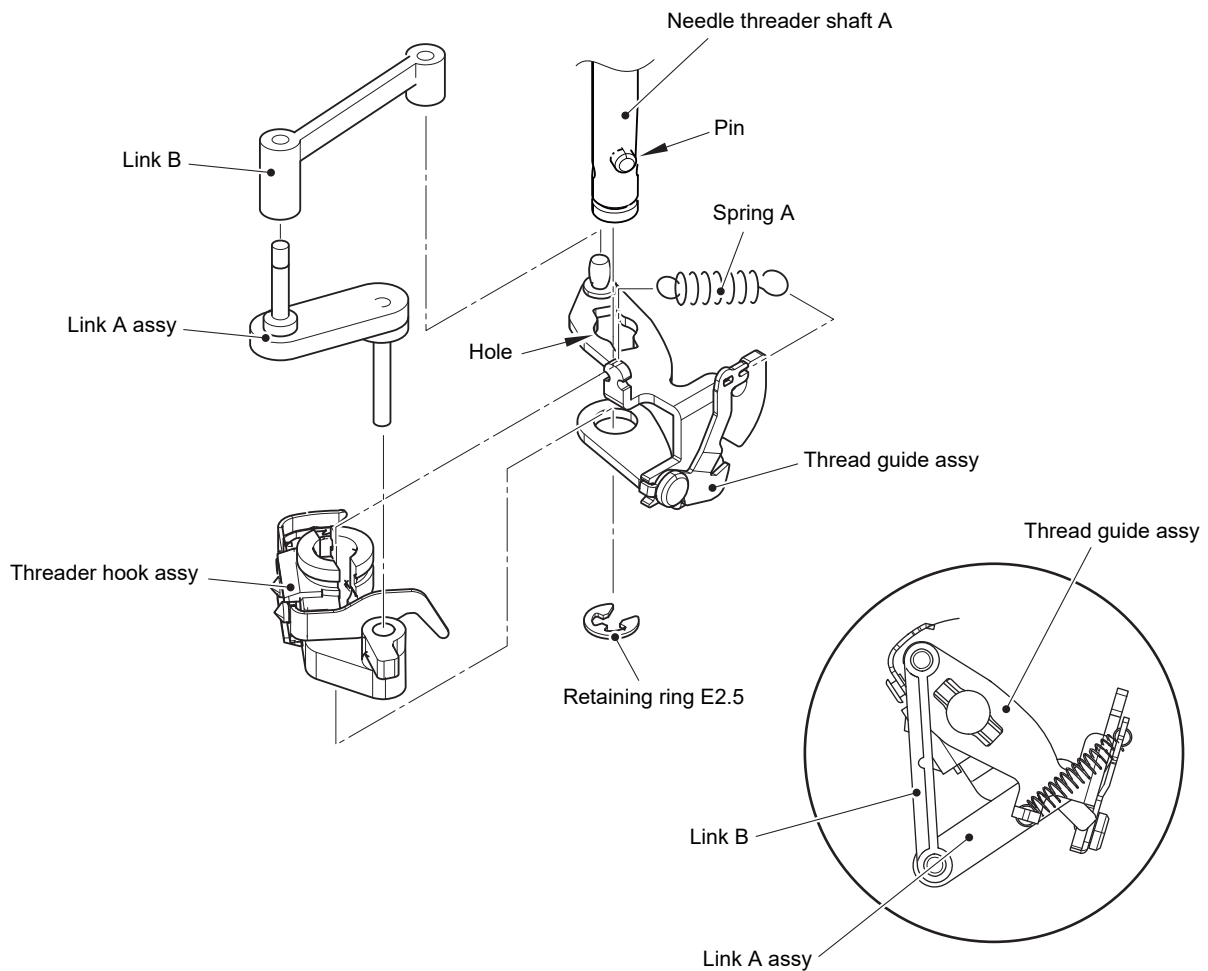
1. Remove the retaining ring E2.5 from the needle threader shaft A of needle bar supporter assy.
2. Pull out the threader hook assy from the needle threader shaft A.
3. Disassemble the threader hook assy, link A assy, link B, and the thread guide assy.
4. Remove the spring A from the thread guide assy.

**Assembling note**

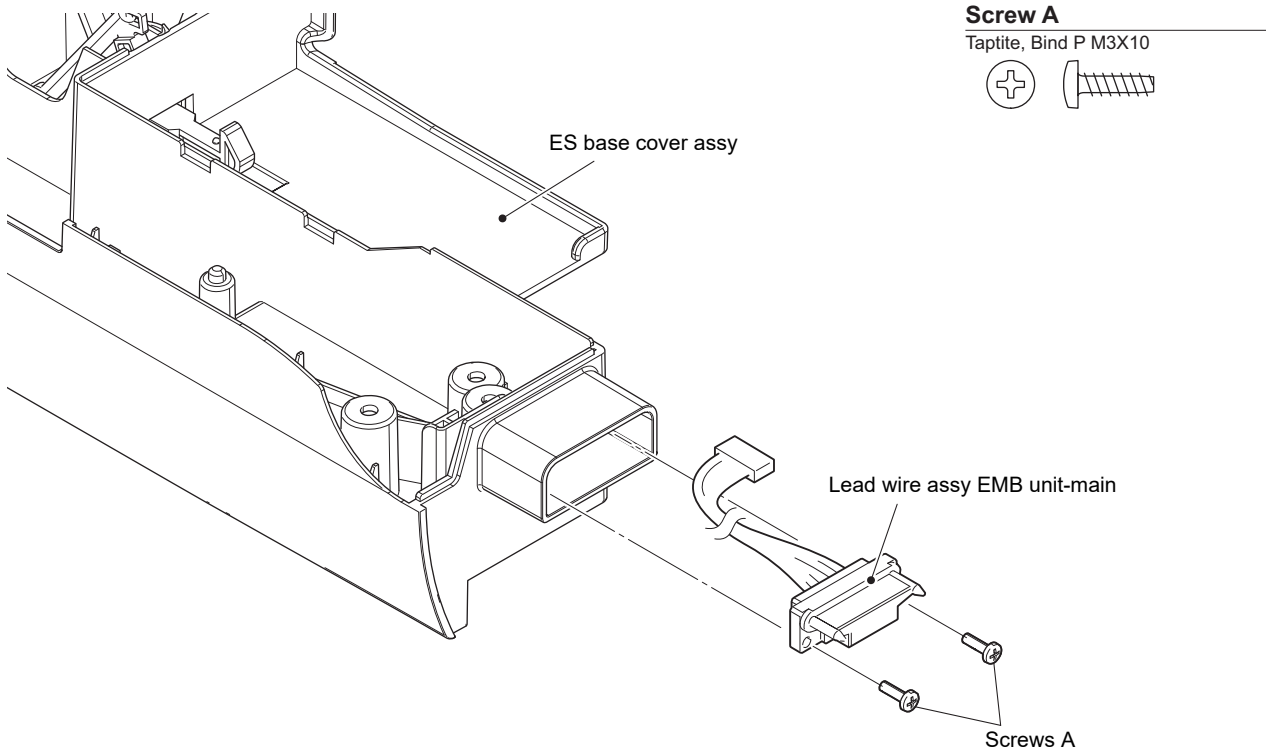
- Assemble the threader hook assy so that a triangle is formed.
- Align the shaft hole of threader hook assy with the pin of needle threader shaft A.

Spring A

Spring (XC9616)



1. Remove the two screws A to remove the lead wire assy EMB unit-main from the ES base cover assy.

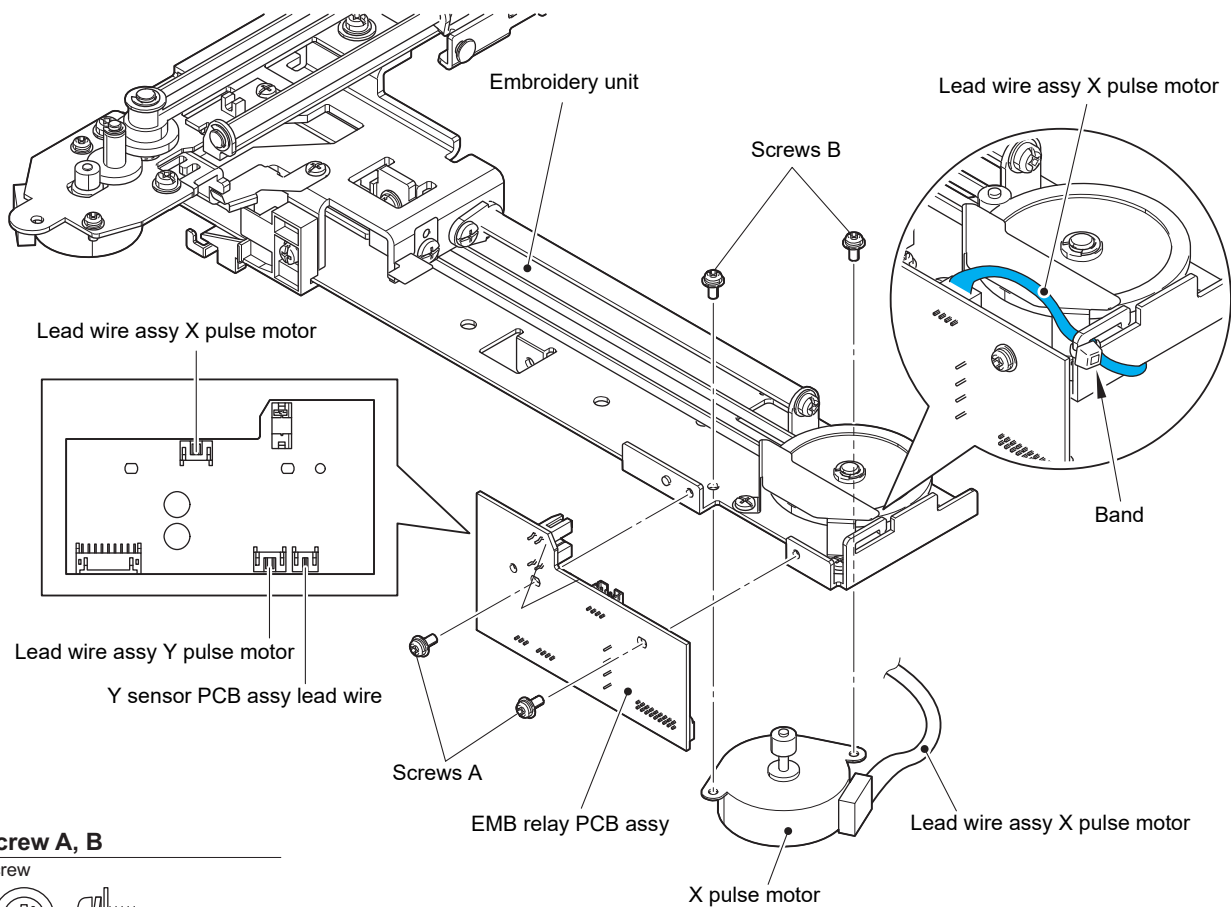


1. Disconnect all connectors from the EMB relay PCB assy.
2. Remove the two screws A to remove the EMB relay PCB assy.
3. Cut the band and release the lead wire assy X pulse motor from the embroidery unit.

**Assembling note**

- Refer to "[Wiring of Embroidery unit \(Top view\)](#)".

4. Remove the two screws B to remove the X pulse motor from the embroidery unit.



1. Release the lead wire supply assy: sleeve from the X slider.

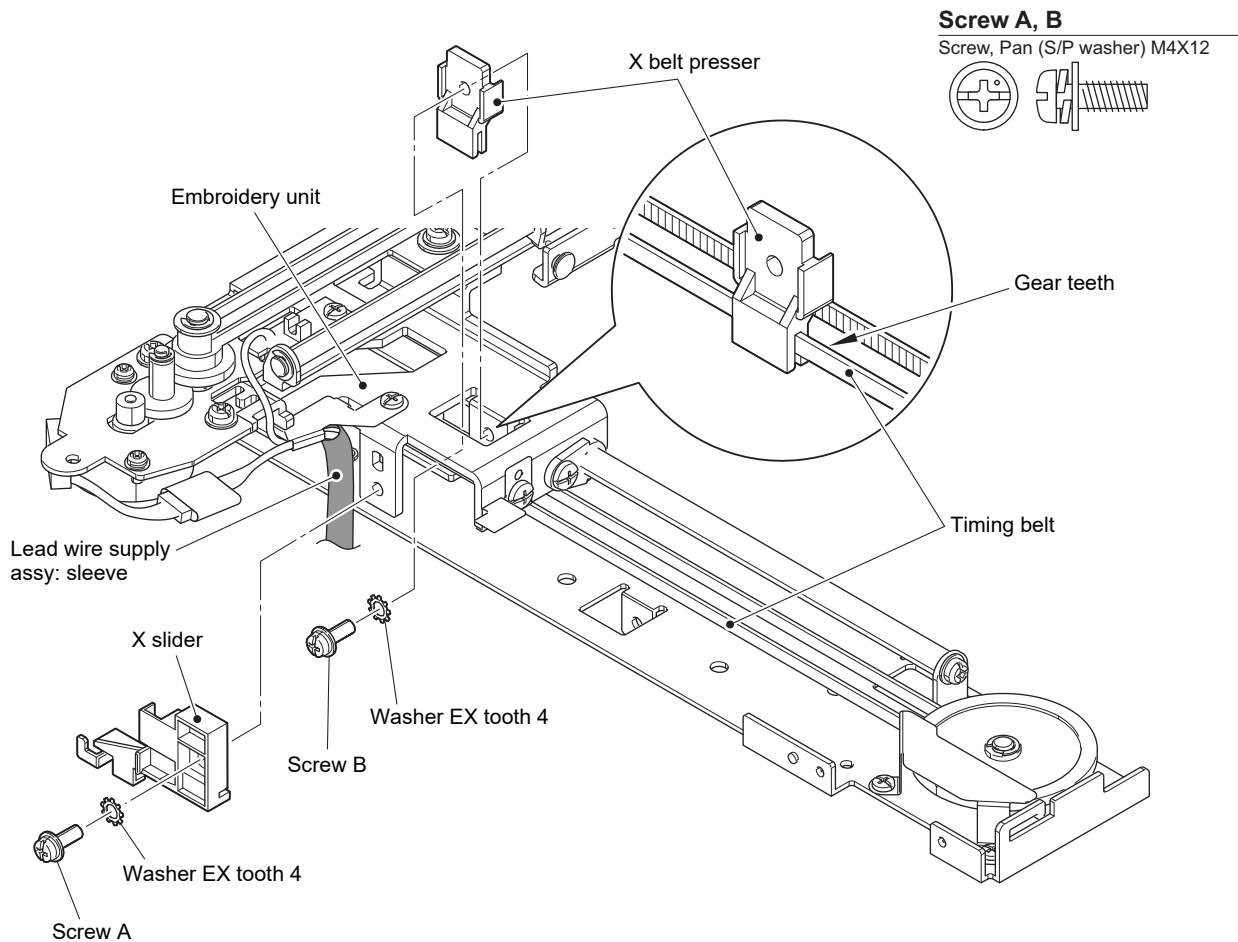
**Assembling note**

- Refer to "Wiring of Embroidery unit (Top view)".

2. Remove the screw A to remove the washer EX tooth 4 and the X slider from the embroidery unit.
3. Remove the screw B to remove the washer EX tooth 4 and the X belt presser from the embroidery unit and the timing belt.

**Assembling note**

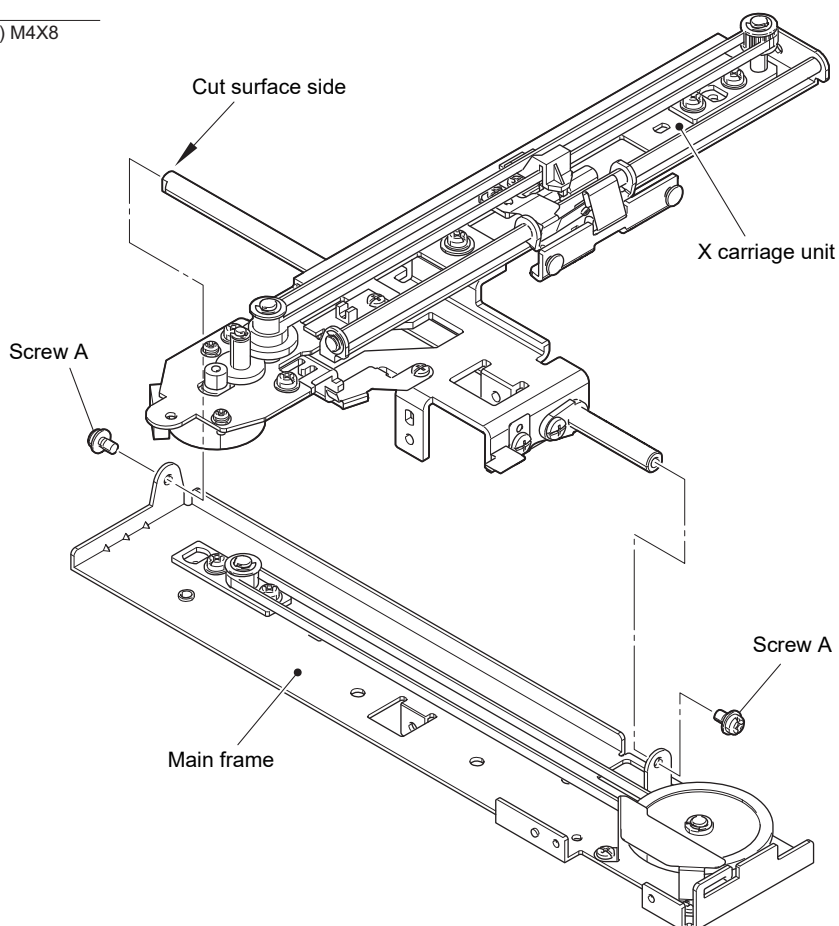
- Check that the gear teeth of X belt presser is engaged with the gear teeth of timing belt.



1. Remove the two screws A to remove the X carriage unit from the main frame.

Screw A

Screw, Pan (S/P washer) M4X8



2. Pull out the X guide shaft.
3. Remove the two screws B to remove the Y tension pulley from the X carriage unit.
4. Remove the screw C to remove the Y slider from the Y carriage assy.

**Assembling note**

- Check that the gullet of Y slider is engaged with the slider part of the X carriage unit.

5. Release the timing belt from the Y slider.

**Assembling note**

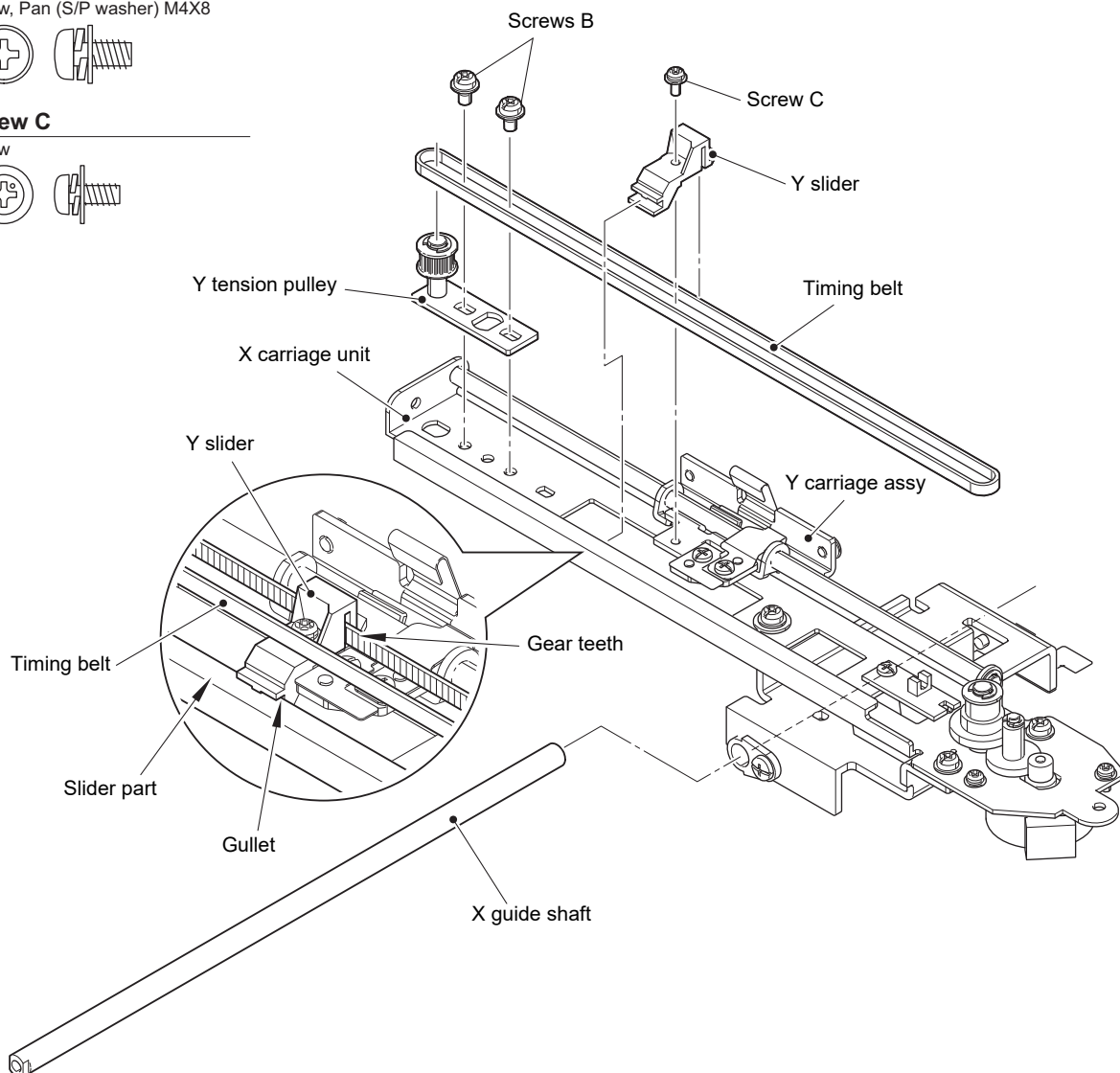
- Check that the gear teeth of Y slider is engaged with the gear teeth of timing belt.

Screw B

Screw, Pan (S/P washer) M4X8

**Screw C**

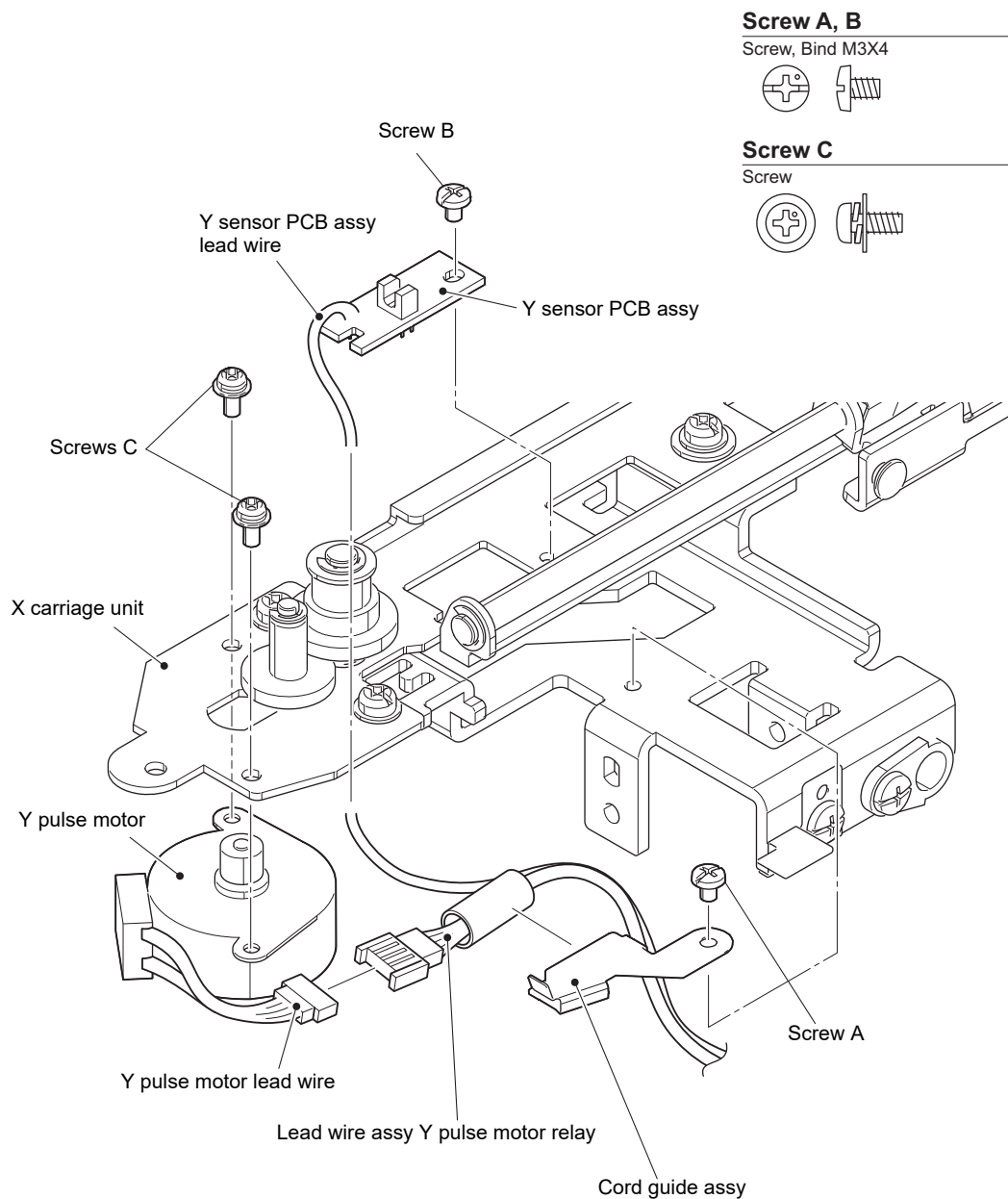
Screw



1. Remove the screw A to remove the cord guide assy from the X carriage unit.
2. Release the lead wire assy Y pulse motor relay and Y sensor PCB assy lead wire from the cord guide assy.
3. Remove the screw B to remove the Y sensor PCB assy from the X carriage unit.
4. Disconnect the lead wire assy Y pulse motor relay from the Y pulse motor lead wire.
5. Remove the two screws C to remove the Y pulse motor from the X carriage unit.

**Assembling note**

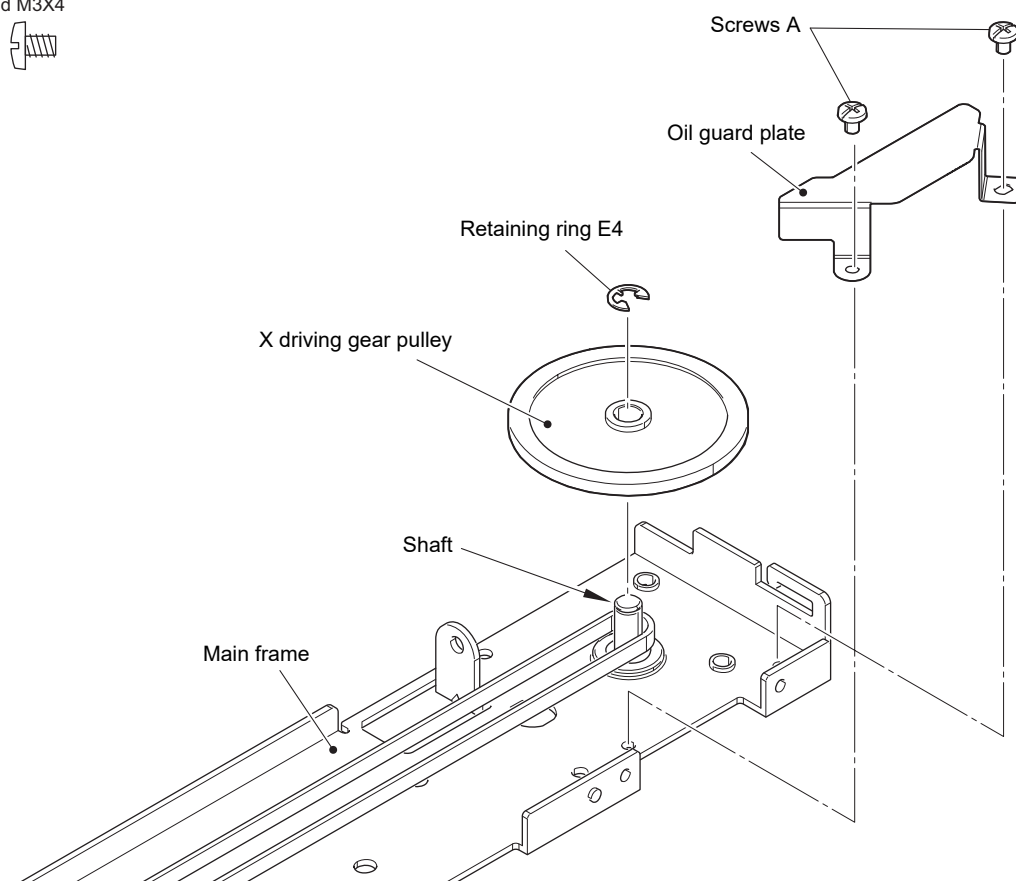
- Refer to "[Wiring of Embroidery unit \(Top view\)](#)", "[Wiring of Embroidery unit \(Bottom view\)](#)".



1. Remove the two screws A to remove the oil guard plate from the main frame.
2. Remove the retaining ring E4 to remove the X driving gear pulley from the shaft of the main frame.

Screw A

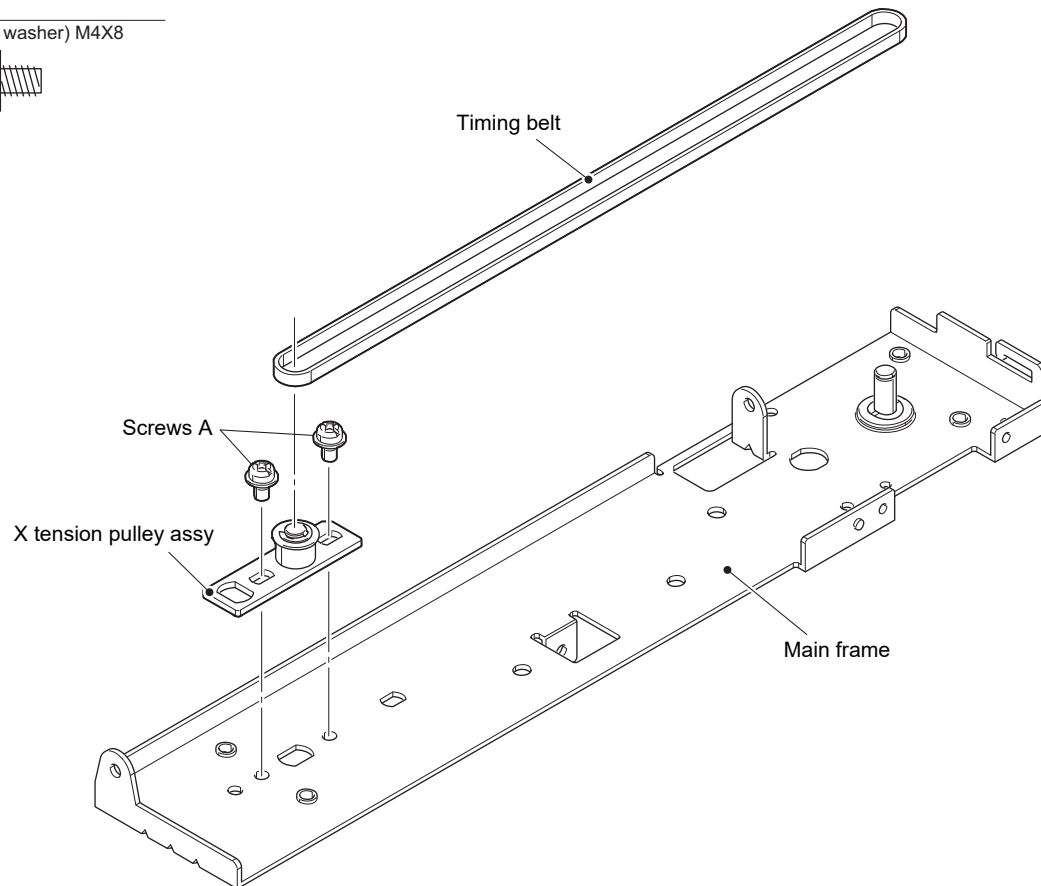
Screw, Blind M3X4

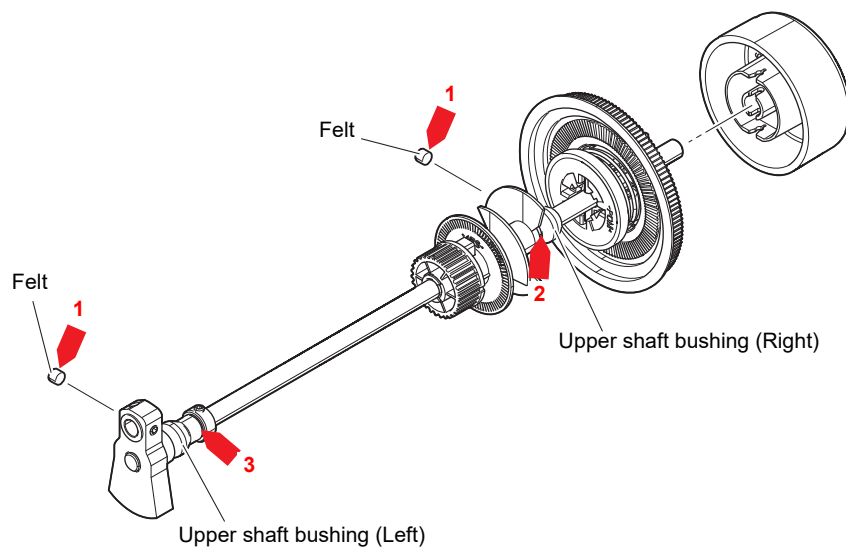


1. Remove the two screws A to remove the X tension pulley assy from the main frame.
2. Release the timing belt.

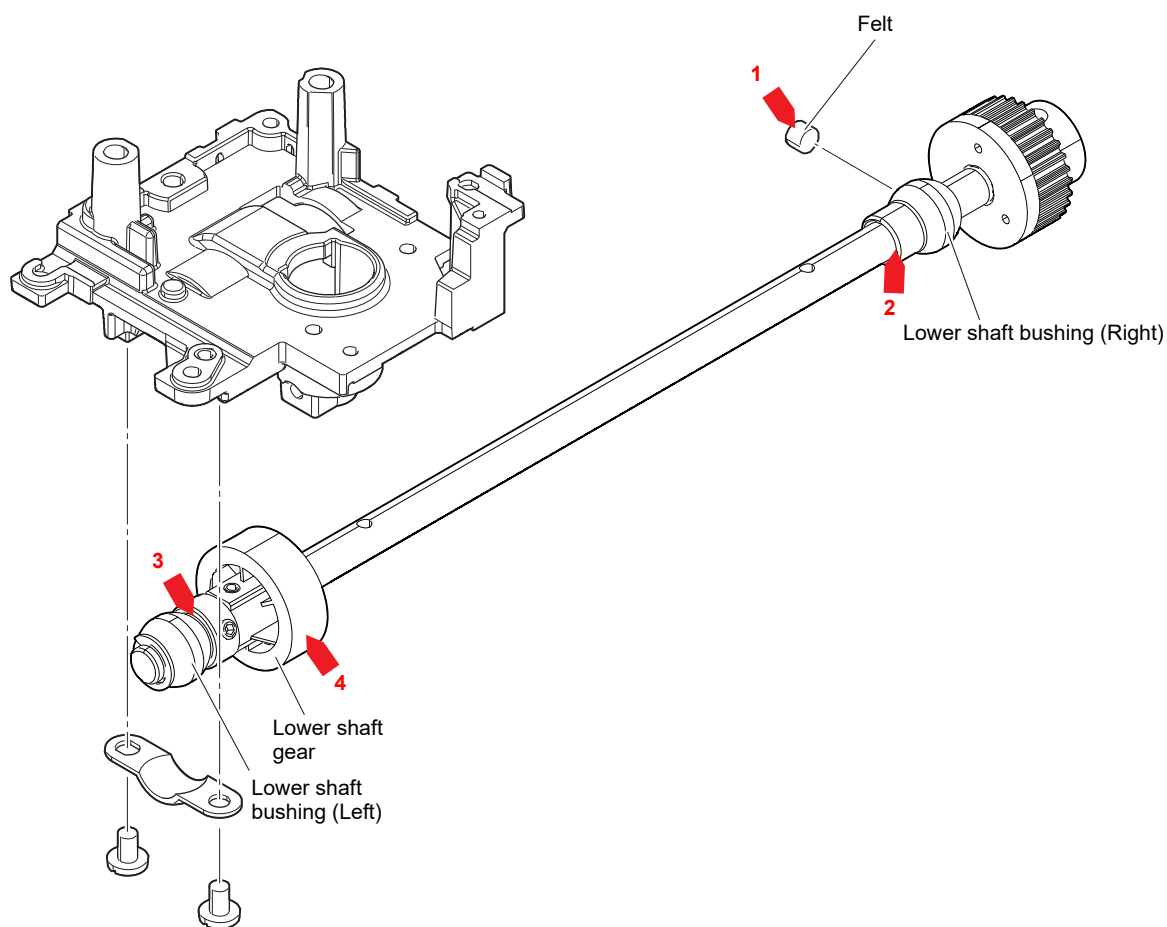
Screw A

Screw, Pan (S/P washer) M4X8

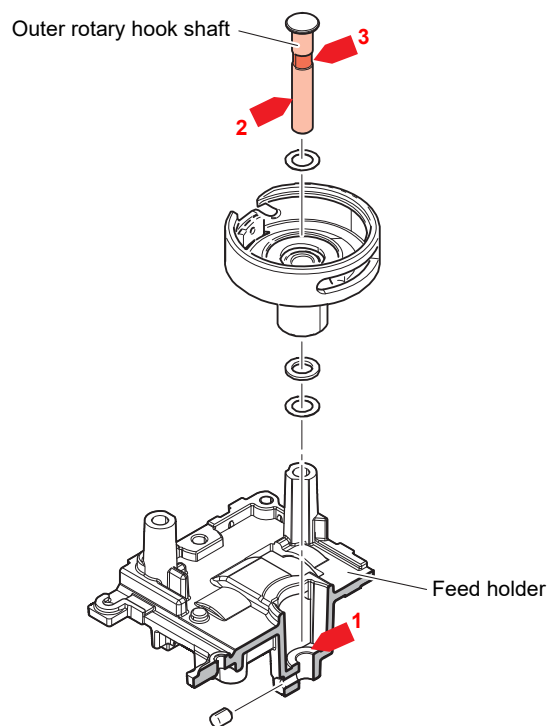




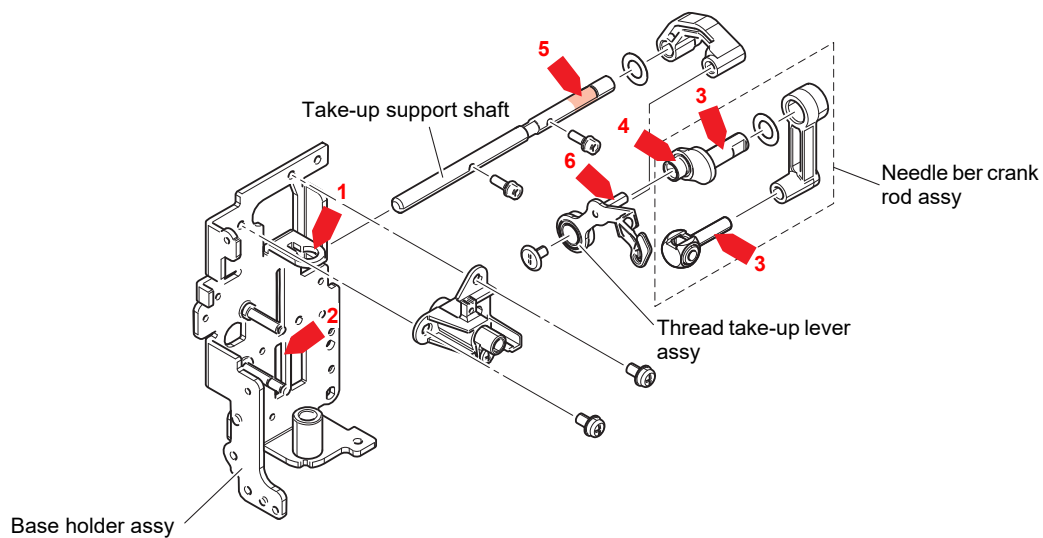
Lubrication point			Lubricating oil type	Quantity of lubrication
1	Felt	2 places	FBK OIL RO 100	1 - 2 drops
2	Upper shaft bushing (Right)	1 place	FBK OIL RO 100	1 - 2 drops
3	Upper shaft bushing (Left)	1 place	FBK OIL RO 100	2 - 3 drops



Lubrication point			Lubricating oil type	Quantity of lubrication
1	Felt	1 place	FBK OIL RO 100	1 - 2 drops
2	Lower shaft bushing (Right)	1 place	FBK OIL RO 100	2 - 3 drops
3	Lower shaft bushing (Left)	1 place	FBK OIL RO 100	1 - 2 drops
4	Lower shaft gear	1 place	MOLYKOTE EM30L	5 mm diameter ball

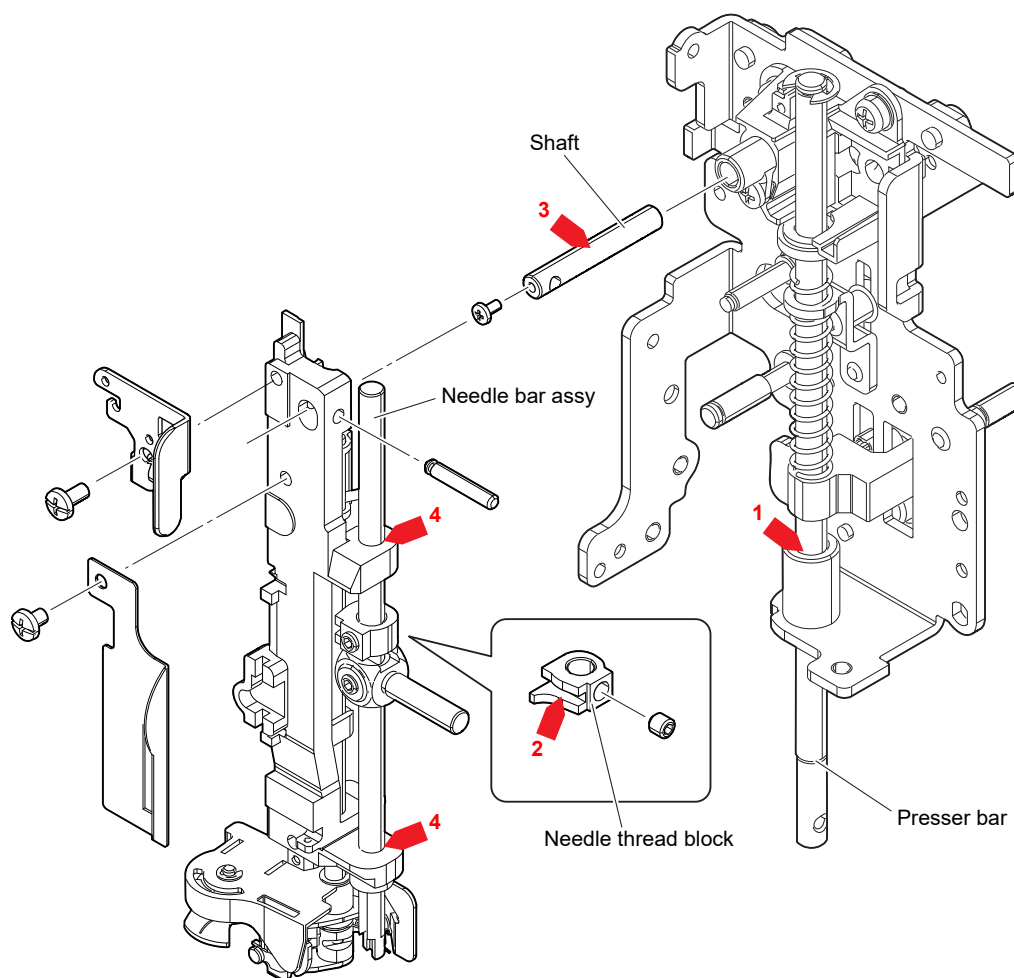


Lubrication point			Lubricating oil type	Quantity of lubrication
1	Feed holder	1 place	MOLYKOTE EM30L	5 mm diameter ball
2	Outer rotary hook shaft	1 place	OILER B ASSY	Apply liberally
3		1 place	EPNOC AP(N)0	4 mm diameter ball

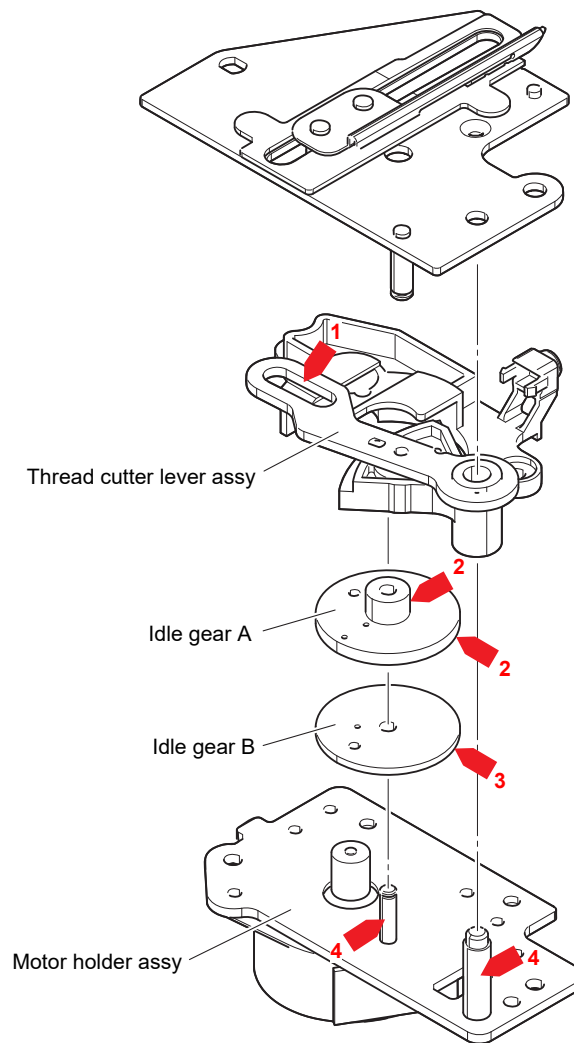


Lubrication point			Lubricating oil type	Quantity of lubrication
1	Base holder assy	1 place	MOLYKOTE EM30L	4 mm diameter ball
2		1 place	EPNOC AP(N)0	Thinly all surface
3	Needle bar crank rod assy	2 places	MOLYKOTE M DISPERSION *	1 - 2 drops
4		1 place	MOLYKOTE EM30L	5 mm diameter ball
5	Take-up support shaft	1 place	MOLYKOTE EM30L	4 mm diameter ball
6	Thread take-up lever assy	1 place	MOLYKOTE EM30L	4 mm diameter ball

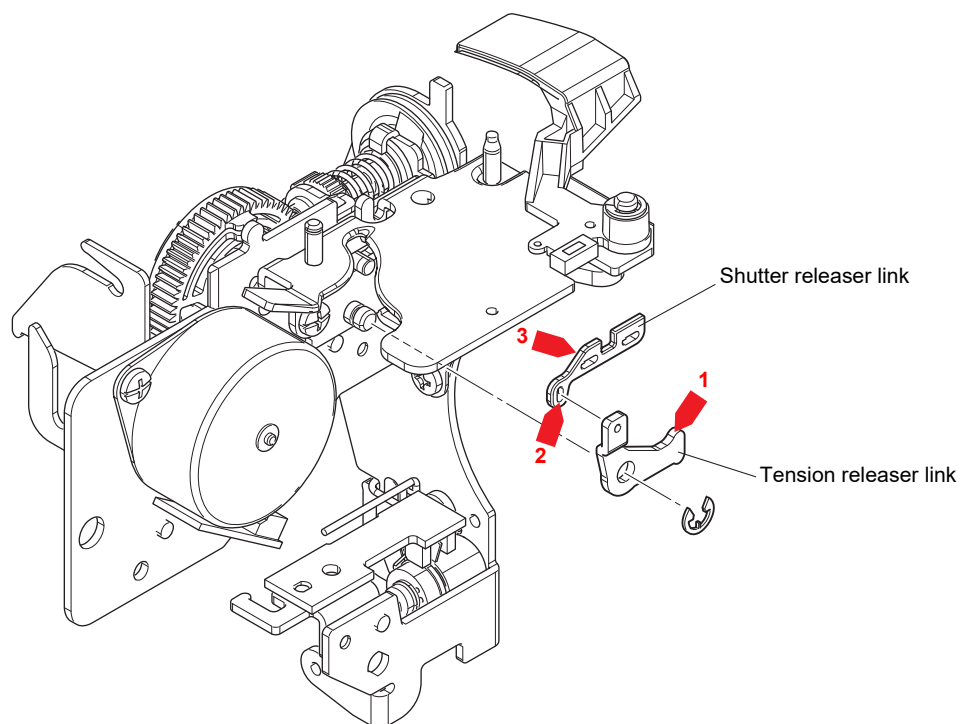
* Mix MOLYKOTE M DISPERSION and OILER B ASSY in a ratio of 1:9.



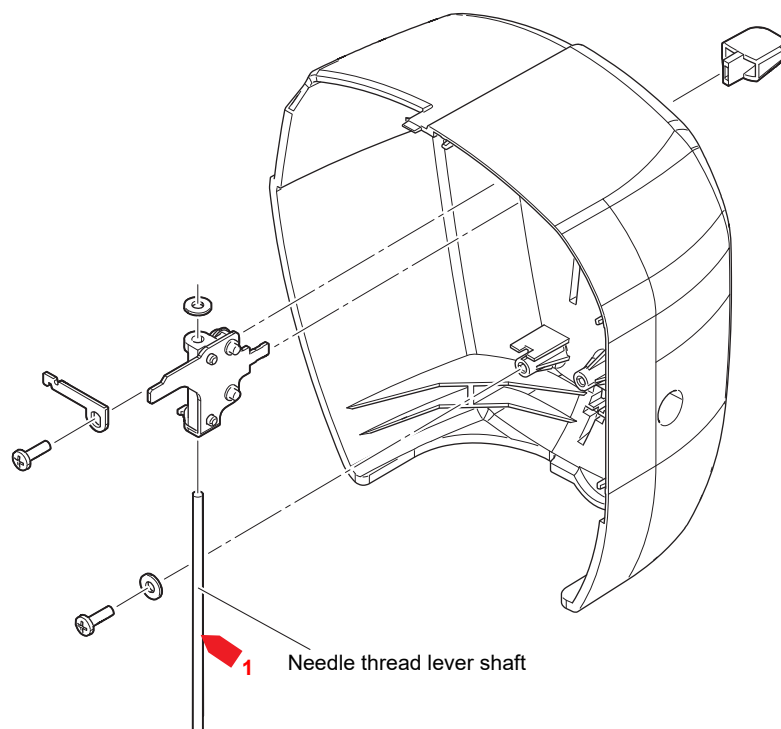
Lubrication point			Lubricating oil type	Quantity of lubrication
1	Presser bar	1 place	FBK OIL RO 100	1 - 2 drops
2	Needle thread block	1 place	EPNOC AP(N)0	Thinly all surface
3	Shaft	1 place	FBK OIL RO 100	1 - 2 drops
4	Needle bar assy	2 places	OILER B ASSY	1 - 2 drops



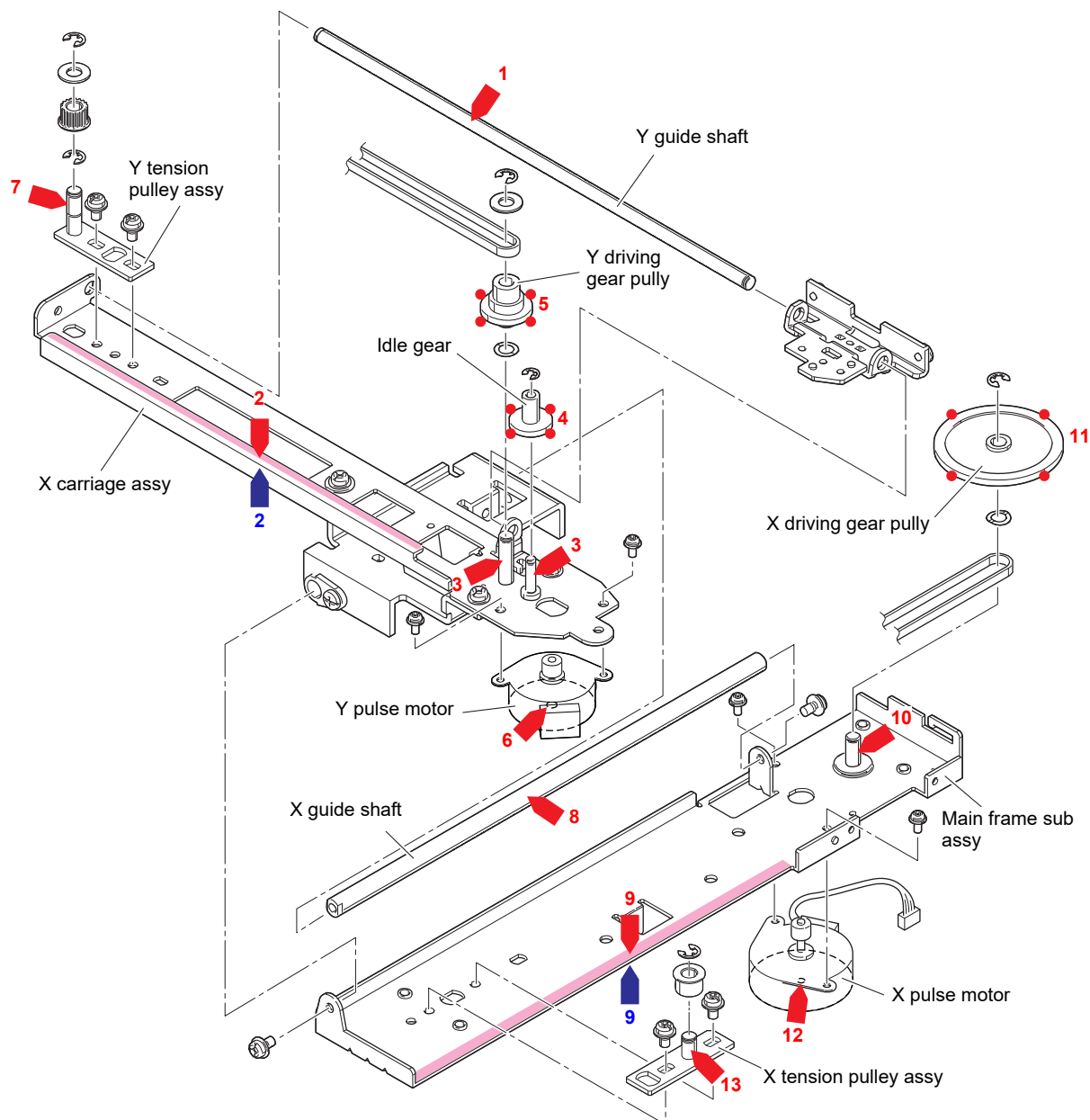
Lubrication point			Lubricating oil type	Quantity of lubrication
1	Thread cutter lever assy	1 place	EPNOC AP(N)0	Thinly all surface
2	Idle gear A	2 places	EPNOC AP(N)0	Thinly all surface
3	Idle gear B	1 place	EPNOC AP(N)0	Thinly all surface
4	Motor holder assy	2 places	EPNOC AP(N)0	Thinly all surface



Lubrication point			Lubricating oil type	Quantity of lubrication
1	Tension releaser link	1 place	EPNOC AP(N)0	4 mm diameter ball
2	Shutter releaser link	1 place	EPNOC AP(N)0	4 mm diameter ball
3		1 place	EPNOC AP(N)0	Thinly all surface



Lubrication point			Lubricating oil type	Quantity of lubrication
1	Needle thread lever shaft	1 place	MOLYKOTE EM30L	Thinly all surface



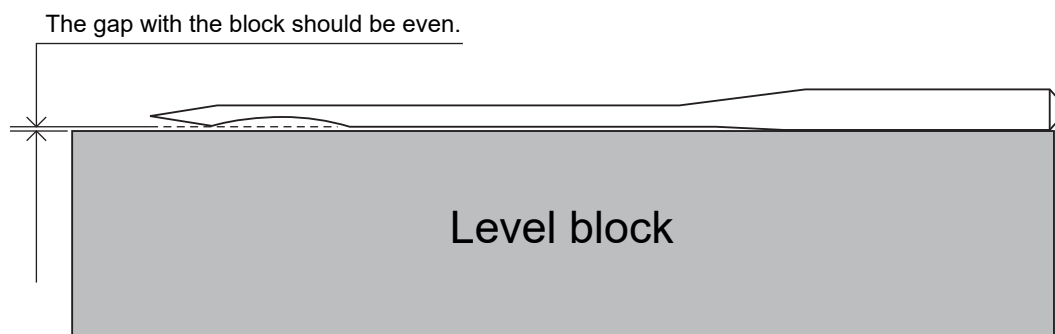
Lubrication point			Lubricating oil type	Quantity of lubrication
1	Y guide shaft	1 place	MOLYKOTE M DISPERSION *	Thinly all surface
2	X carriage assy	2 places	EPNOC AP(N)0	Thinly all surface
3		2 places	EPNOC AP(N)0	5 mm diameter ball
4	Idle gear	4 places	EPNOC AP(N)0	5 mm diameter ball
5	Y driving gear pulley	4 places	EPNOC AP(N)0	5 mm diameter ball
6	Y pulse motor	1 place	FBK OIL RO 100	1 - 2 drops
7	Y tension pulley assy	1 place	EPNOC AP(N)0	5 mm diameter ball
8	X guide shaft	1 place	MOLYKOTE M DISPERSION *	Thinly all surface
9	Main frame sub assy	2 places	EPNOC AP(N)0	Thinly all surface
10		1 place	EPNOC AP(N)0	5 mm diameter ball
11	X driving gear pulley	4 places	EPNOC AP(N)0	5 mm diameter ball
12	X pulse motor	1 place	FBK OIL RO 100	1 - 2 drops
13	X tension pulley assy	1 place	EPNOC AP(N)0	5 mm diameter ball

* Mix MOLYKOTE M DISPERSION and OILER B ASSY in a ratio of 1:9.

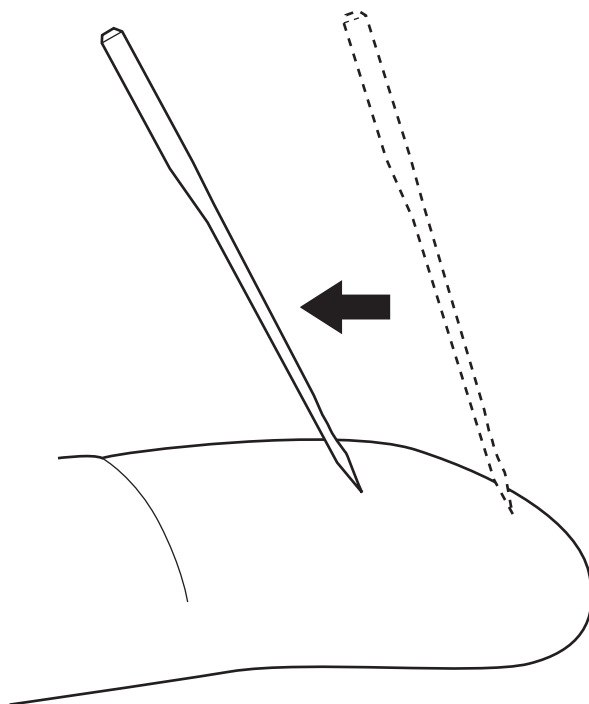
4 Adjustment

Inspection	Needle point damage	4 - 2
Test Mode	Start test mode	4 - 3
Adjustment	Touch panel.....	4 - 4
	Timing belt tension	4 - 5
	Timing belt and belt support upper/lower clearance	4 - 6
	Motor belt tension	4 - 7
	Fine tension.....	4 - 8
	Upper thread tension	4 - 9
	Front/back position of needle and presser foot	4 - 10
	Right/left position of needle and presser foot	4 - 11
	Needle bar rising	4 - 12
	Needle bar height	4 - 13
	Needle clearance	4 - 14
	Needle threader.....	4 - 15
	Presser bar height	4 - 16
	Inner rotary hook bracket position	4 - 17
	Lower thread winding	4 - 18
	Lower thread tension (inner rotary hook assy)	4 - 19
	Belt tension (embroidery unit)	4 - 20
	Embroidery center position (embroidery unit)	4 - 21
	Switching LCD display setting	4 - 23

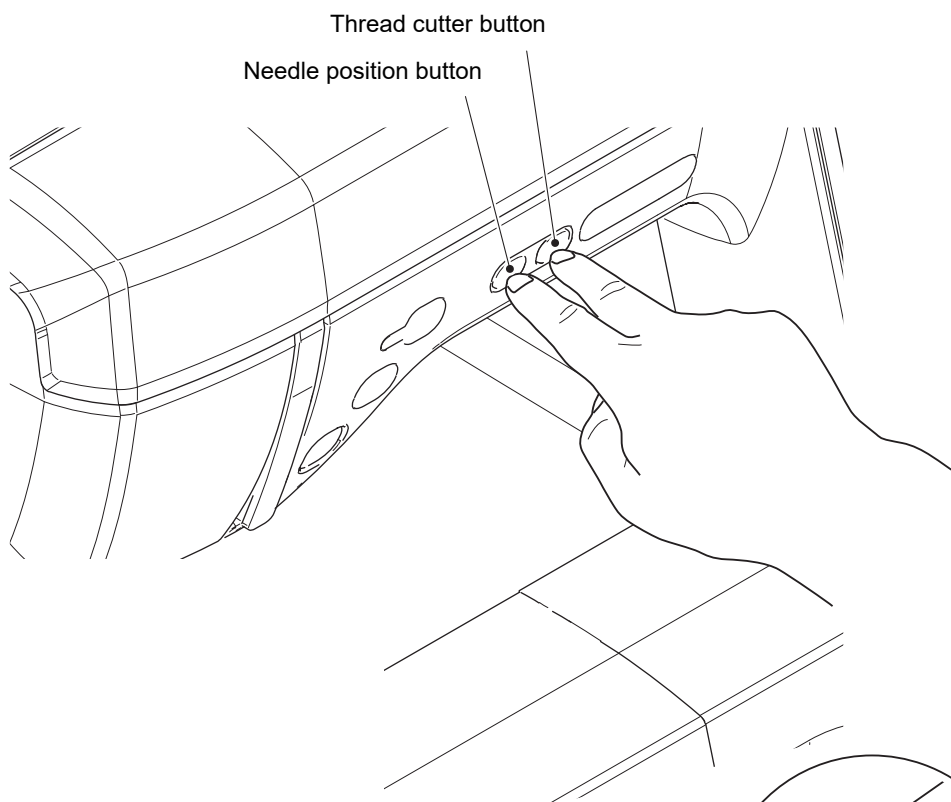
1. Put a needle on the level block, and check the needle is not bent.



2. Slide a needle on your finger and check it moves smoothly.

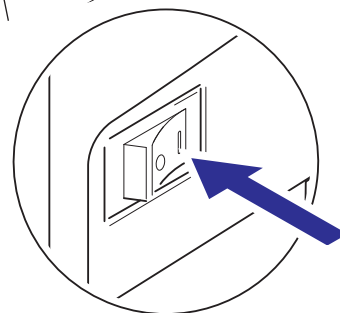


Turn on the machine while pressing  (Needle position button) and  (Thread cutter button) to start (test mode selection screen appears).



01. SERIAL NUMBER	05. CLEARANCE CK	1 / 6  
02. THICKNESS SET	06. FEED DOG POS	
03. PATTERN ADJ	07.	
04. 3POINT N DROP	08. EMB POSITION	

Test mode selection screen



[Standard]

“SUCCESS” should be displayed after touching five “+” on touch panel setting screen by touch pen in numerical order.

[Adjustment]

1. Turn off the machine.
2. Turn on the machine while touching screen by touch pen or fingers.

***Key point**

- Keep touching the screen until touch panel setting screen appears.

3. Touch five “+” on screen by touch pen in numerical order.
 - Setting is completed once “SUCCESS” appears on the screen. Go to procedure 4.
 - Try procedure 3 again if “ERROR” appears on the screen.

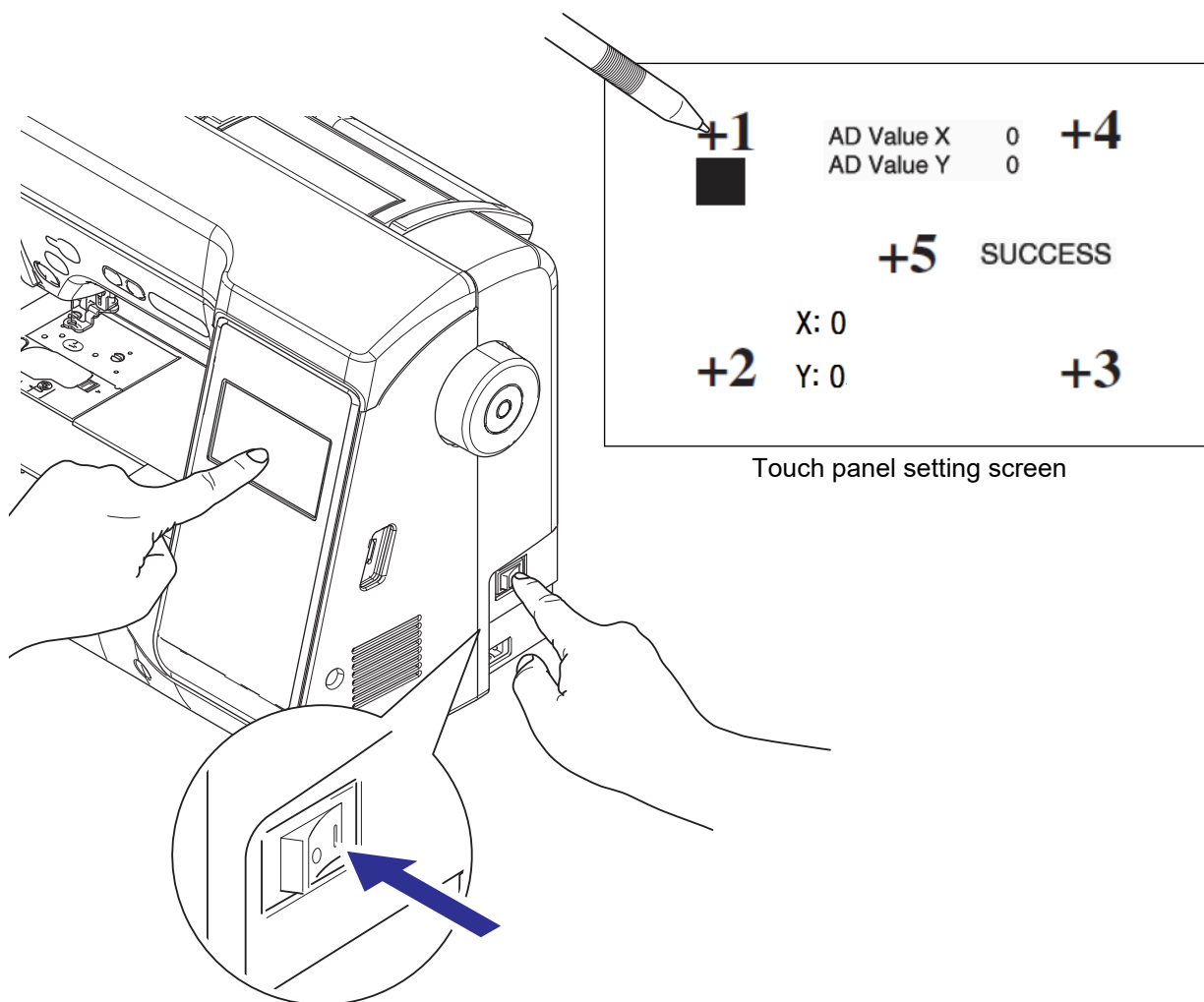
***Note**

- Use the provided touch pen when you press marks on the screen.
Do not use sharp or hard objects to avoid scratch on the touch panel.

4. Turn off the machine.

***Key point**

- Turn on the machine after adjustment to check if the position touched by touch pen is properly recognized by the machine.



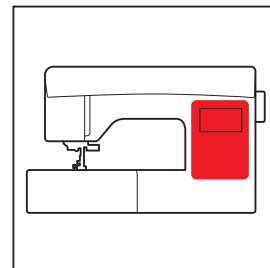
Touch panel setting screen

[Standard]

3.5 ±0.5 mm (3 to 4 mm) slack should be made by pushing the timing belt at the middle of timing pulley shaft and tension pulley shaft with a force of 1.96 N (200 gf).

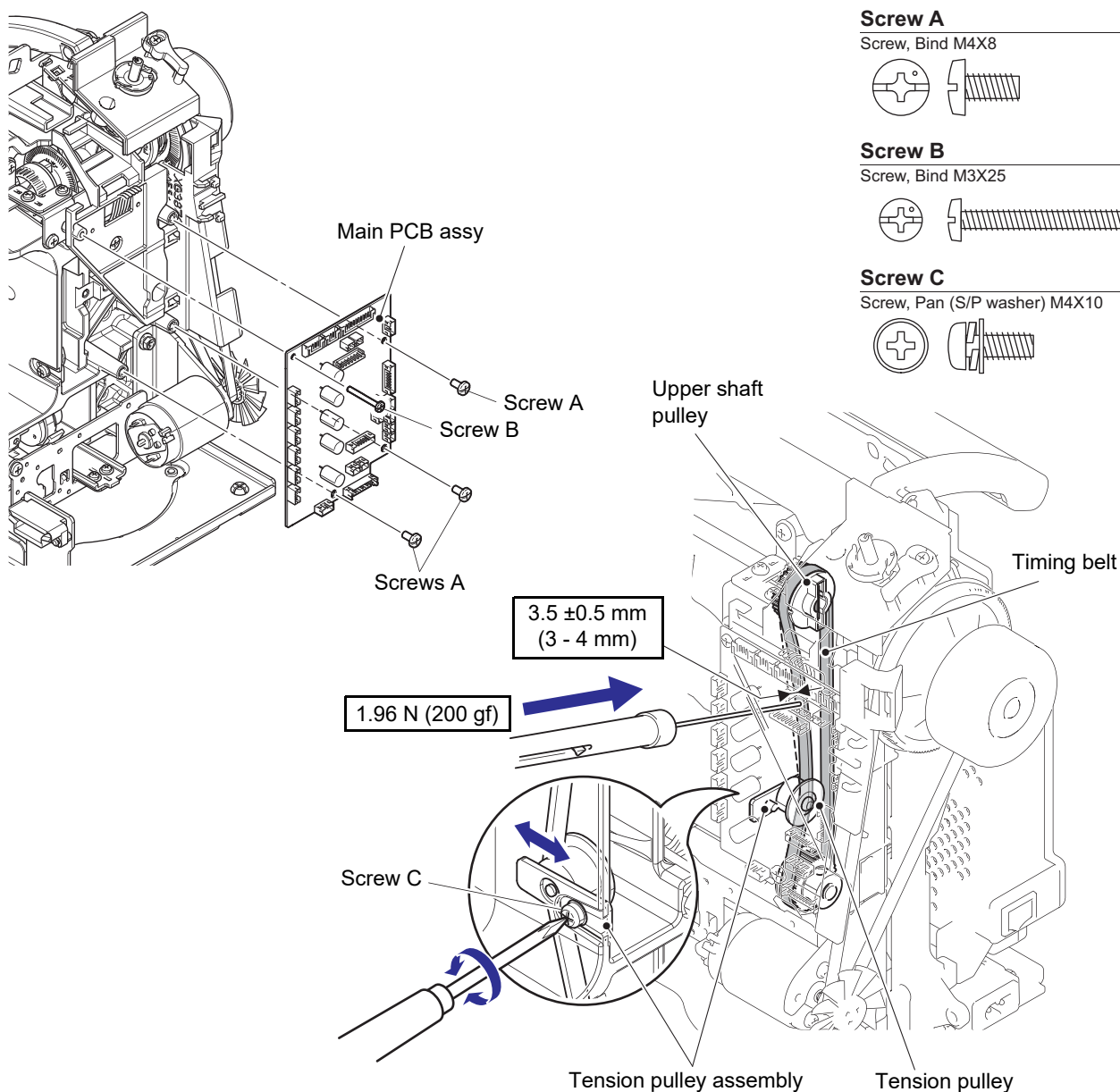
[Adjustment]

1. Remove the front cover assy and the rear cover. (Refer to "2-5" / "2-6".)
2. Remove the 3 screws A and screw B of the main PCB assy to remove it from the machine.
3. Loosen the screw C of the tension pulley assembly.
4. Move the tension pulley assembly back and forth to adjust the tension of the timing belt.
5. Tighten the screw C of the tension pulley assembly to secure the tension pulley assembly to the arm bed.



XC2277001

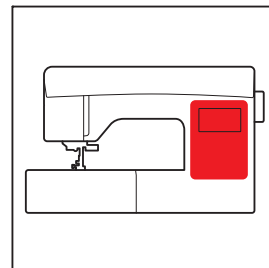
Push pull gauge (5N)



[Standard]

The clearance between the timing belt and the belt support upper adjust of belt support upper should be 0.1 to 0.3 mm.

The clearance between the timing belt and the belt support lower adjust should be 0.1 to 0.3 mm.

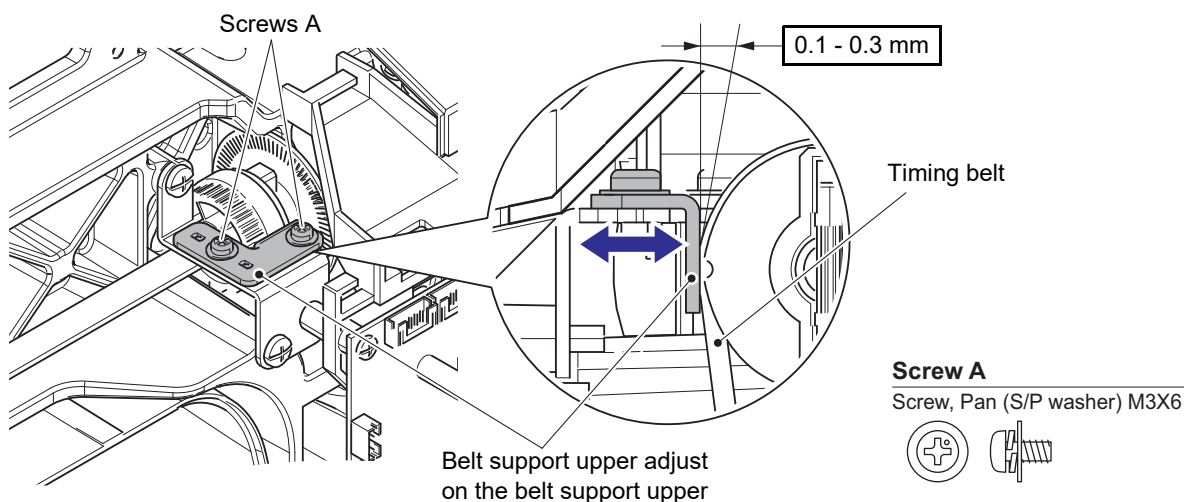


[Adjustment]

1. Remove the front cover assy. (Refer to "2-5".)
2. Loosen the 2 screws A of the belt support upper adjust on the belt support upper.
3. Move the belt support upper adjust on the belt support upper back and forth to adjust the clearance between the timing belt and the belt support upper adjust on the belt support upper.

***Key point**

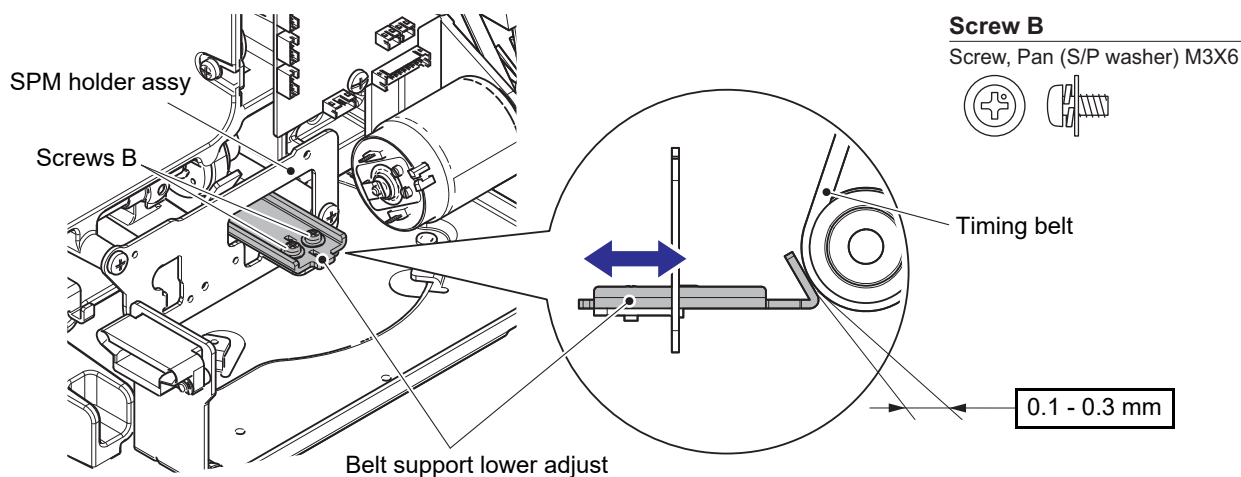
- The clearance between the timing belt and the belt support upper adjust of belt support upper should be 0.1 to 0.3 mm.
4. Tighten the 2 screws A of the belt support upper adjust on the belt support upper to secure the belt support upper adjust on the belt support upper to the belt support upper.



5. Loosen the 2 screws B of the belt support lower adjust.
6. Move the belt support lower adjust back and forth to adjust the clearance between the timing belt and the belt support lower adjust.

***Key point**

- The clearance between the timing belt and the belt support lower adjust should be 0.1 to 0.3 mm.
7. Tighten the 2 screws B of the belt support lower adjust to secure the belt support lower adjust to the SPM holder assy.

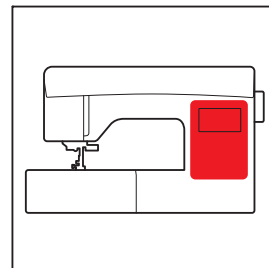


[Standard]

4.5 ± 0.5 mm (4 to 5 mm) slack should be made by pushing the motor belt at the middle of timing pulley shaft and motor T-pulley shaft with a force of 0.98 N (100 gf).

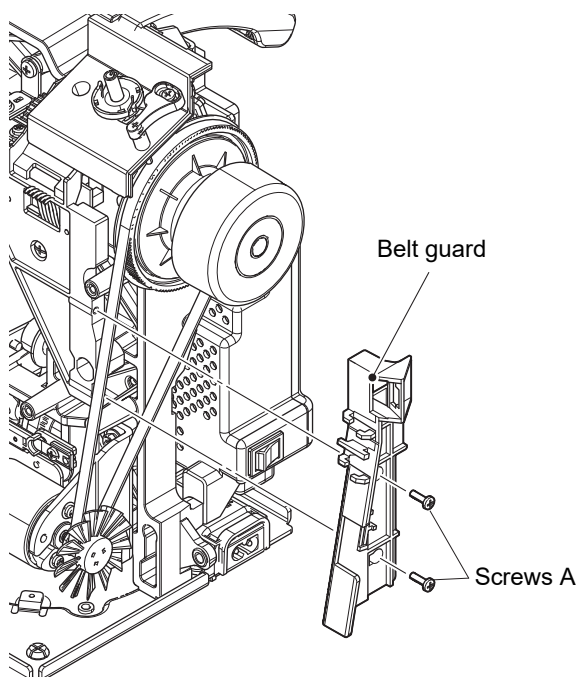
[Adjustment]

1. Remove the front cover assy. (Refer to "2-5".)
2. Remove the 2 screws A to remove the belt guard.
3. Loosen the 2 screws B of the motor holder.
4. Move the motor holder up and down to adjust the tension of the motor belt.
5. Tighten the 2 screws B of the motor holder to secure the motor holder to the arm bed.



XC2277001

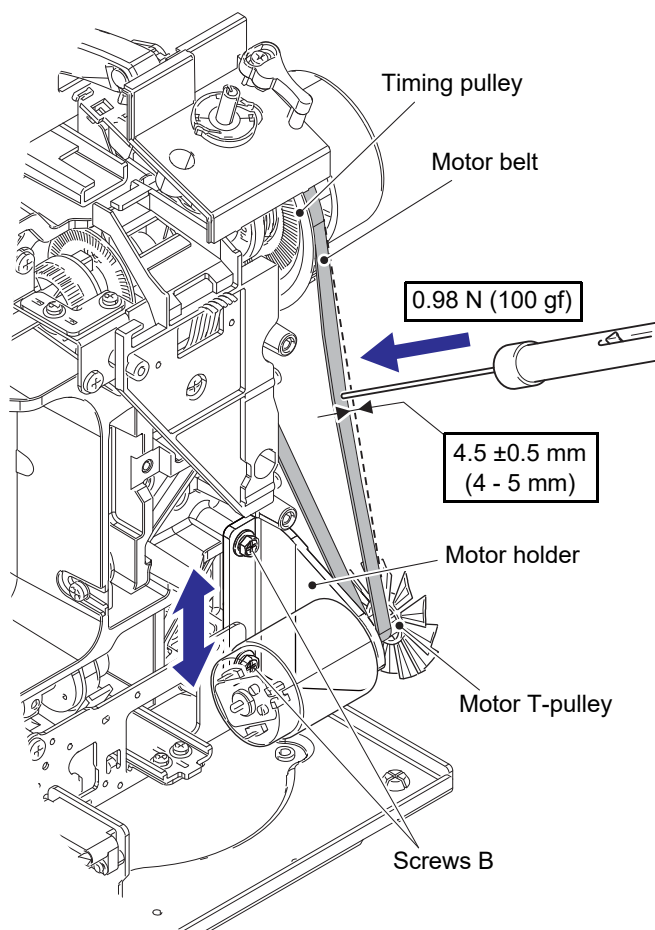
Push pull gauge (5N)

**Screw A**

Taptite, Bind B M3X10

**Screw B**

Upset M4X12DB



[Standard]

Start test mode, pass the schappe spun thread #60 through tension plate from thread guide and pull it slowly by tension gauge. The tension should be adjusted in 0.06 to 0.09 N (6 to 9 gf).

[Adjustment]

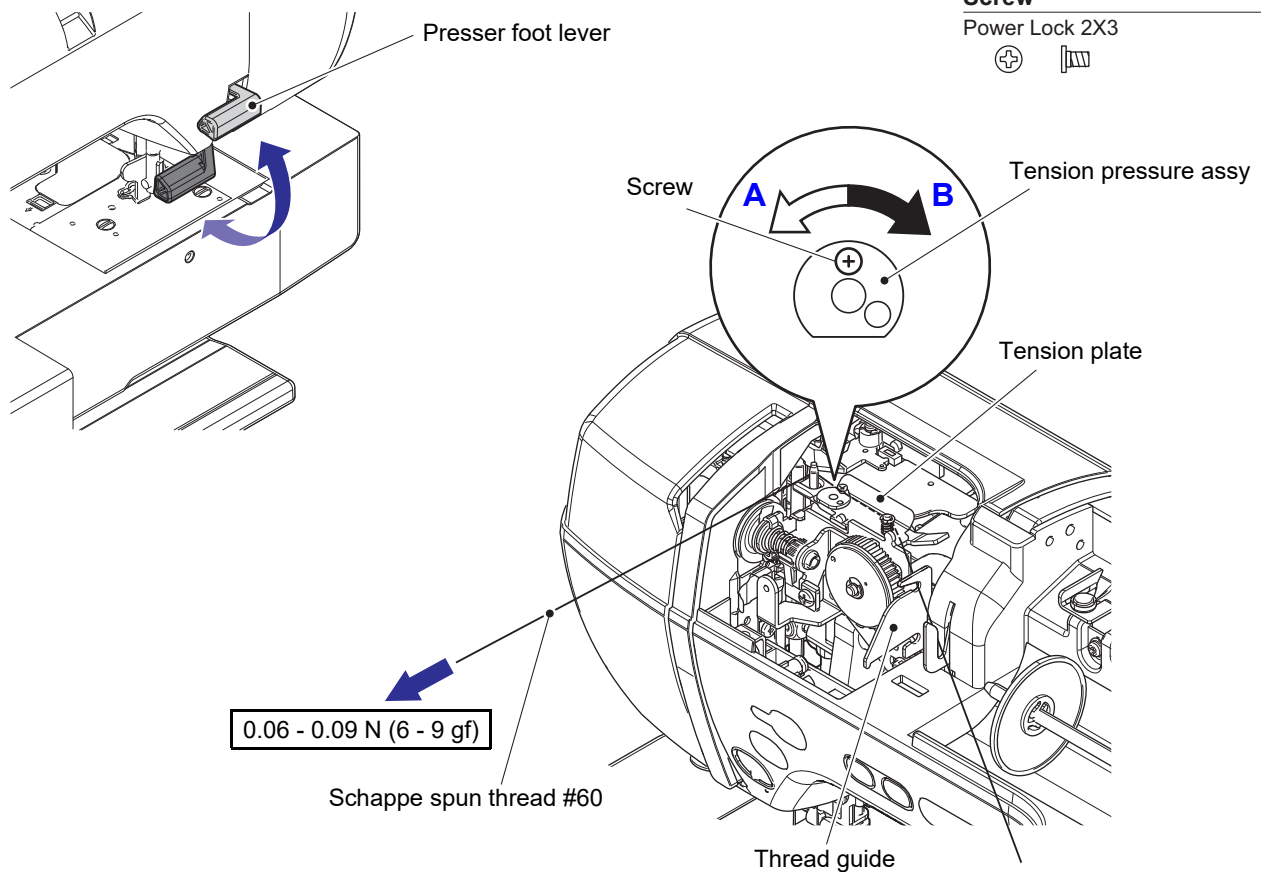
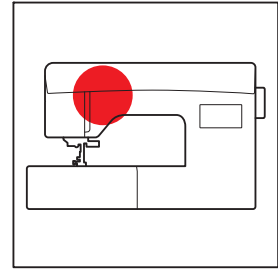
1. Remove the front thread guard cover. (Refer to "2-4".)
2. Start the test mode.
3. Raise the presser foot lever.
4. Pass the schappe spun thread #60 through the thread guide and then tension plate.
5. Lower the presser foot lever.
6. Pull the thread slowly by the tension gauge, and check the thread tension.
7. Adjust the thread tension by turning the screw of the tension pressure assy.

***Key point**

- Loosen the screw (turn to the direction of "A"). → The thread tension gets looser.
- Tighten the screw (turn to the direction of "B"). → The thread tension gets tighter.

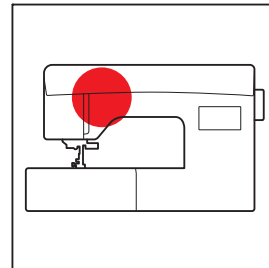
XA9152001

Tension gauge 10 (0.1N)



[Standard]

Start test mode, pass the schappe spun thread #60 through the thread guide, tension plate, tension disk A/B and plate assembly, and pull it slowly by tension gauge. The tension should be adjusted in 0.34 to 0.44 N (35 to 45 gf).



[Adjustment]

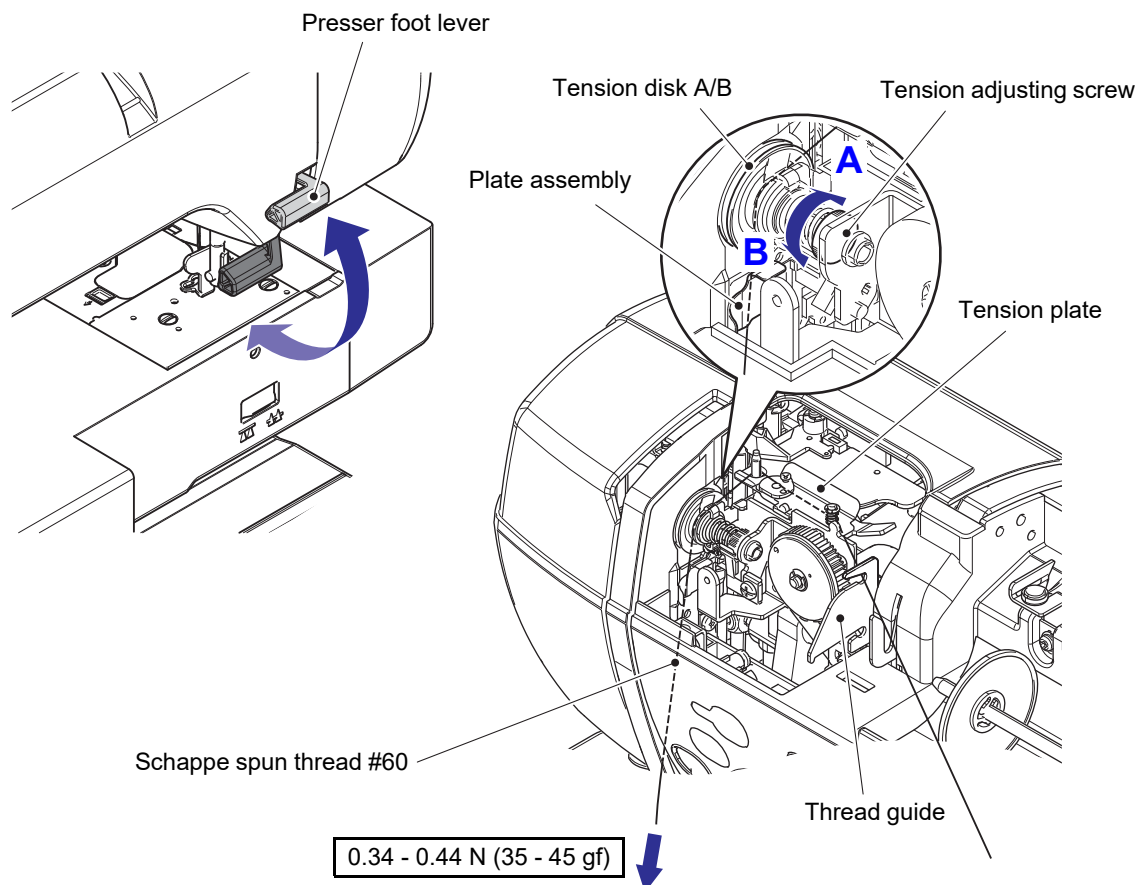
1. Remove the front thread guard cover. (Refer to "2-4".)
2. Start the test mode.
3. Raise the presser foot lever.
4. Pass the schappe spun thread #60 through the thread guide, tension plate, tension disk A/B and plate assembly in this order.
5. Lower the presser foot lever.
6. Pull the thread slowly by the tension gauge, and check the thread tension.
7. Adjust the thread tension by turning the tension adjusting screw.

***Key point**

- Loosen the tension adjusting screw (turn to the direction of "A"). → The thread tension gets tighter.
 - Tighten the tension adjusting screw (turn to the direction of "B"). → The thread tension gets looser.
8. After adjustment, apply a small amount of the thread locker to tension adjusting screw.

XA9154001

Tension gauge 50 (0.5N)

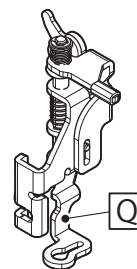


[Standard]

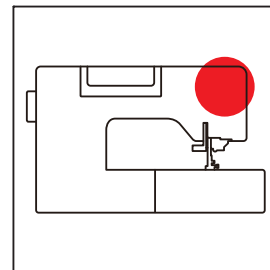
The needle point should be dropped in the longitudinal center of the presser foot hole.

[Adjustment]

1. Remove the face plate assy. (Refer to "2-4".)
2. Attach the embroidery foot "Q".
3. Attach the size 75/11 needle.
4. Lower the presser foot lever.
5. Turn the pulley by hand, put the needle point into the embroidery foot "Q" hole, and check the position of the needle point.
6. Raise the presser foot lever to raise the presser foot.
7. Adjust the position of the needle point by turning the screw. (Fig.1)
8. Lower the presser foot lever to lower the presser foot, and check the position of the needle point.



Embroidery foot "Q"

***Key point**

- If the lock nut is loosened after adjustment, tighten the lock nut to secure the screw.

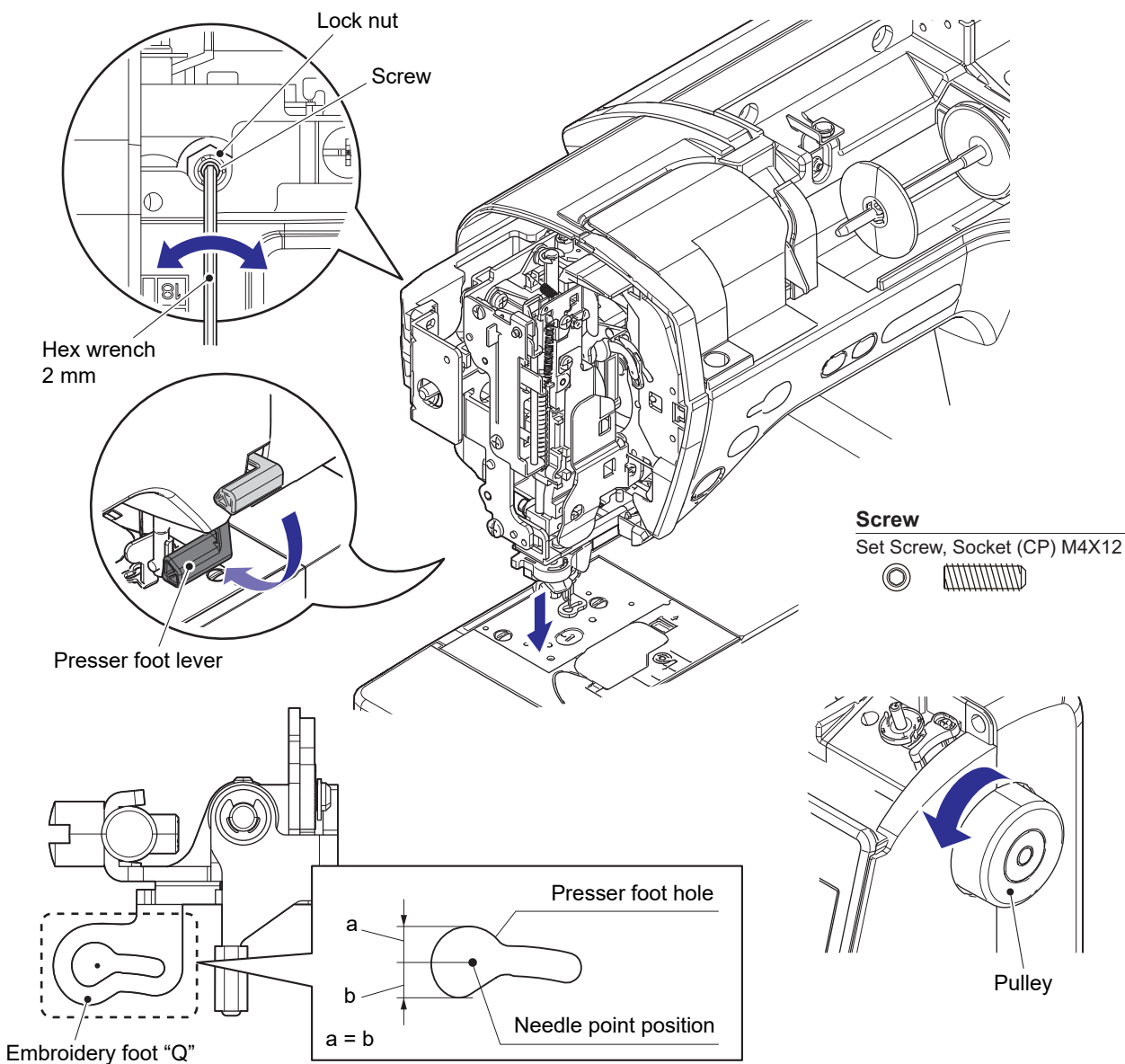


Fig.1

[Standard]

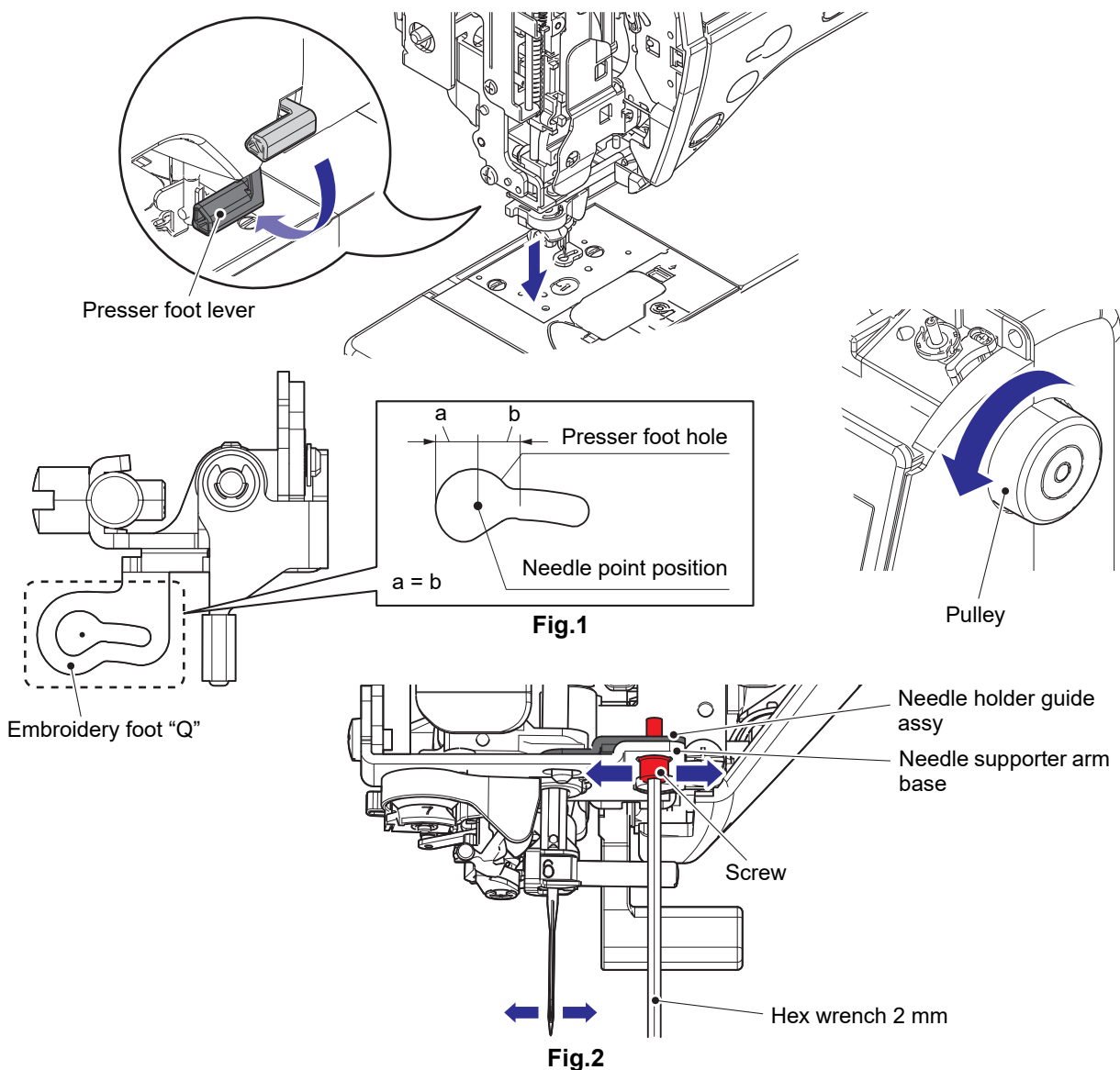
The needle point should be dropped in the lateral center of the presser foot hole.

[Adjustment]

1. Remove the face plate assy. (Refer to "2-4".)
2. Attach the embroidery foot "Q".
3. Attach the size 75/11 needle.
4. Lower the presser foot lever.
5. Turn the pulley by hand, put the needle point into the embroidery foot "Q" hole, and check the position of the needle point. (Fig.1)
6. Raise the presser foot lever to raise the presser foot.
7. Loosen the screw of the needle holder guide assy.
8. Adjust the position of the needle point by moving the needle holder guide assy left or right. (Fig.2)
9. Tighten the screw of the needle holder guide assy to secure the needle holder guide assy to the needle supporter arm base.
10. Lower the presser foot lever to lower the presser foot, and check the position of the needle point.

***Key point**

- If the lock nut is loosened after adjustment, tighten the lock nut to secure the screw.



[Standard]

The right edge of the needle should be coincided with the outer rotary hook point when raising needle bar 2.77 ± 0.2 mm (2.67 to 2.97 mm) up from its lowest.

[Adjustment]

1. Remove the front cover assy. (Refer to "2-5".)
2. Remove the presser foot.
3. Remove the needle plate B assy, the needle plate A assy and the inner rotary hook assy.
4. Attach the size 75/11 needle.
5. Turn the pulley by hand to the front, and raise the needle bar 2.77 mm up from its lowest position. (Fig.1)
6. Loosen the 2 screws of the timing pulley D. (Fig.2)
7. Turn the outer rotary hook assy by hand in the direction of the arrow, and adjust the right edge of the needle to be coincided with the outer rotary hook assy point. (Fig.3)
8. Tighten the 2 screws of the timing pulley D to secure the timing pulley D to the lower shaft assy.

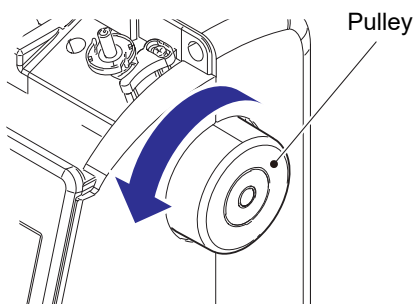
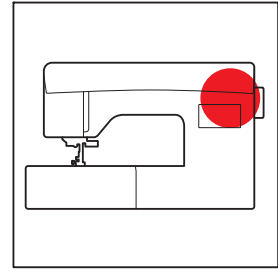


Fig.1

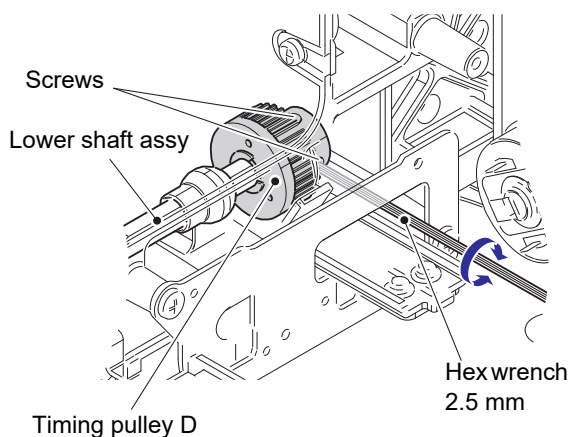
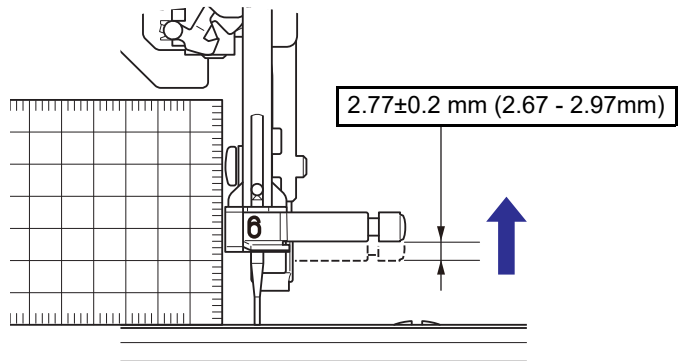


Fig.2

Screw

Set Screw, Socket (CP) M5X5

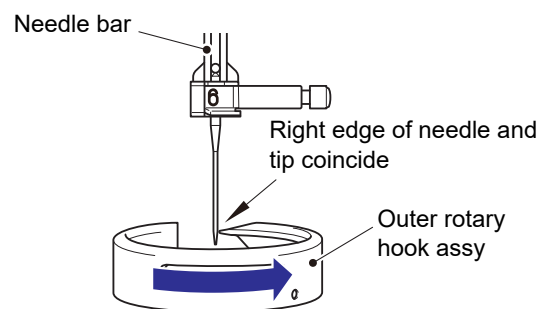


Fig.3

[Standard]

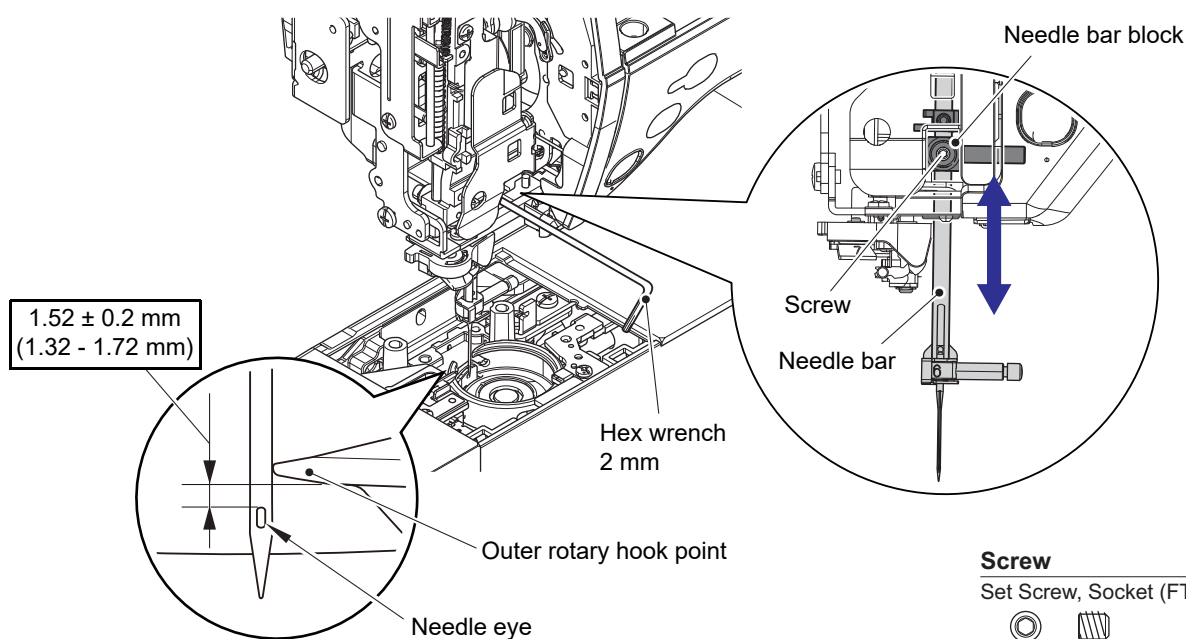
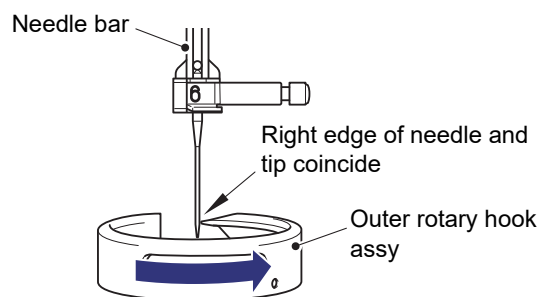
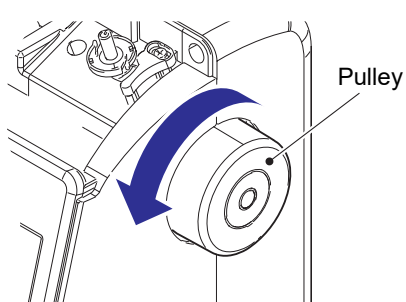
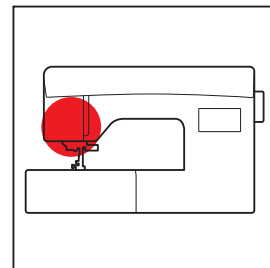
The gap between the top of needle eye and the lower end of the outer rotary hook point should be 1.52 ± 0.2 mm (1.32 to 1.72 mm) when the right edge of the needle is coincided with the outer rotary hook.

[Adjustment]

1. Remove the face plate assy. (Refer to "2-4").
2. Remove the presser foot.
3. Remove the needle plate B assy, the needle plate A assy and the inner rotary hook assy.
4. Attach the size 75/11 needle.
5. Turn the pulley by hand to the front, and adjust the right edge of the needle to be coincided with the tip of outer rotary hook assy.
6. Loosen the screw of the needle bar block.
7. Move the needle bar assy up and down, and adjust the gap between the top of needle eye and the lower end of the outer rotary hook point.
8. Tighten the screw of the needle bar block to secure the needle bar block to the needle bar.

***Key point**

- Be sure to operate "4-15 Needle threader" adjustment after this adjustment.



[Standard]

The clearance between the scarf of the needle and the outer rotary hook point should be 0.25 mm or less when the rear side of the needle is coincided with the outer rotary hook.

[Adjustment]

1. Remove the face plate assy. (Refer to "2-4".)
2. Remove the presser foot.
3. Remove the needle plate B assy, the needle plate A assy and the inner rotary hook assy.
4. Attach the size 75/11 needle.
5. Turn the pulley by hand until the outer rotary hook point coincides with the rear side of the needle.
6. Loosen the screw of the adjusting screw.
7. Adjust the clearance between the scarf of the needle and the outer rotary hook point by turning the adjusting screw.

***Key point**

- Loosen the adjusting screw (turn to the direction of "A"). → Move the needle to rear side. (needle clearance gets smaller.)
- Tighten the adjusting screw (turn to the direction of "B"). → Move the needle to front side. (needle clearance gets larger.)

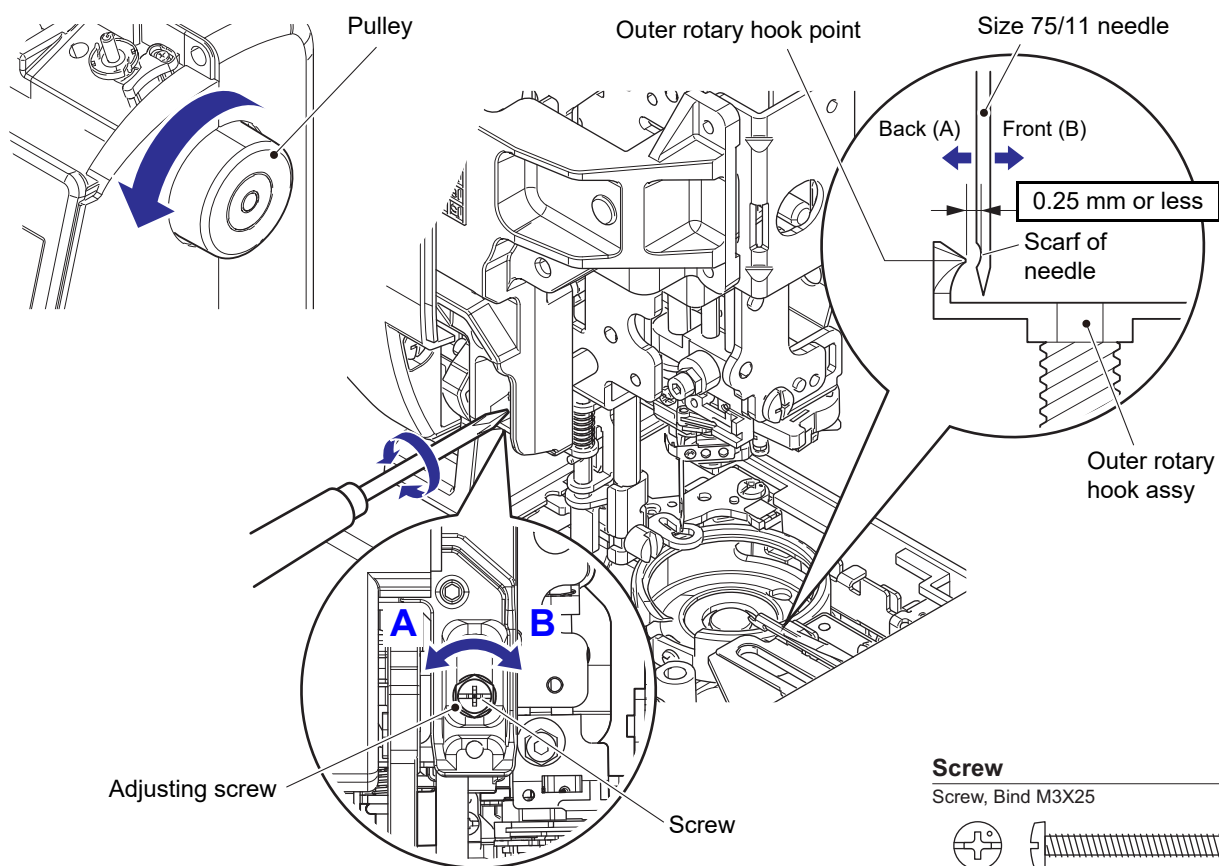
8. Tighten the screw of the adjusting screw to secure the adjusting screw.

***Key point**

- When tightening the screw of the adjusting screw, keep the adjusting screw from moving.

XE2396001

Box screw driver 7



[Standard]

When passing the threader hook into the needle eye, clearance between the upper edge of the threader hook and the upper edge of the needle eye should be 0 mm.

[Adjustment]

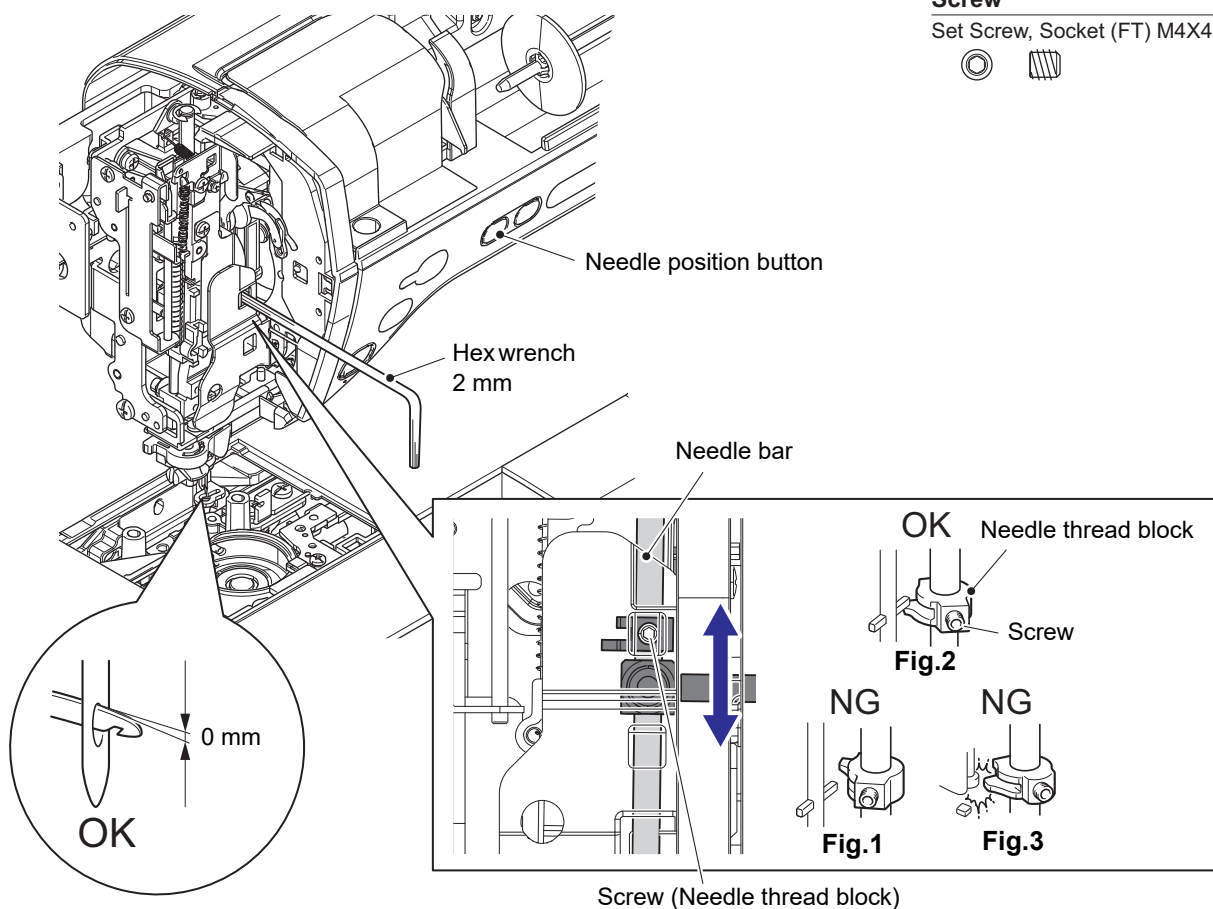
1. Remove the face plate assy. (Refer to "2-4".)
2. Attach the size 75/11 needle.
3. Turn on your sewing machine.
4. Press  (Needle position button) to raise the needle bar to its highest position.
5. Loosen the screw of the needle thread block.
6. Adjust the clearance between the upper edge of the threader hook and the upper edge of the needle eye by moving the needle thread block up and down.
7. Tighten the screw of the needle thread block to secure the needle thread block to the needle bar.
8. After adjusting the clearance, pass the threader hook into the needle eye and check the clearance between the upper edge of the threader hook and the upper edge of the needle eye.

***Key point**

- Be sure to tighten the screw of the needle thread block slightly to the left when it is seen from the front. (Fig.2)
- In case the position of the screw is too left, the hook doesn't turn. (Fig.1)
- In case the position of the screw is too right, the needle thread block contacts the needle bar supporter assy and get damaged. (Fig.3)

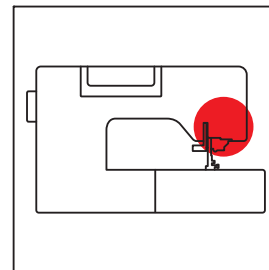
Screw

Set Screw, Socket (FT) M4X4



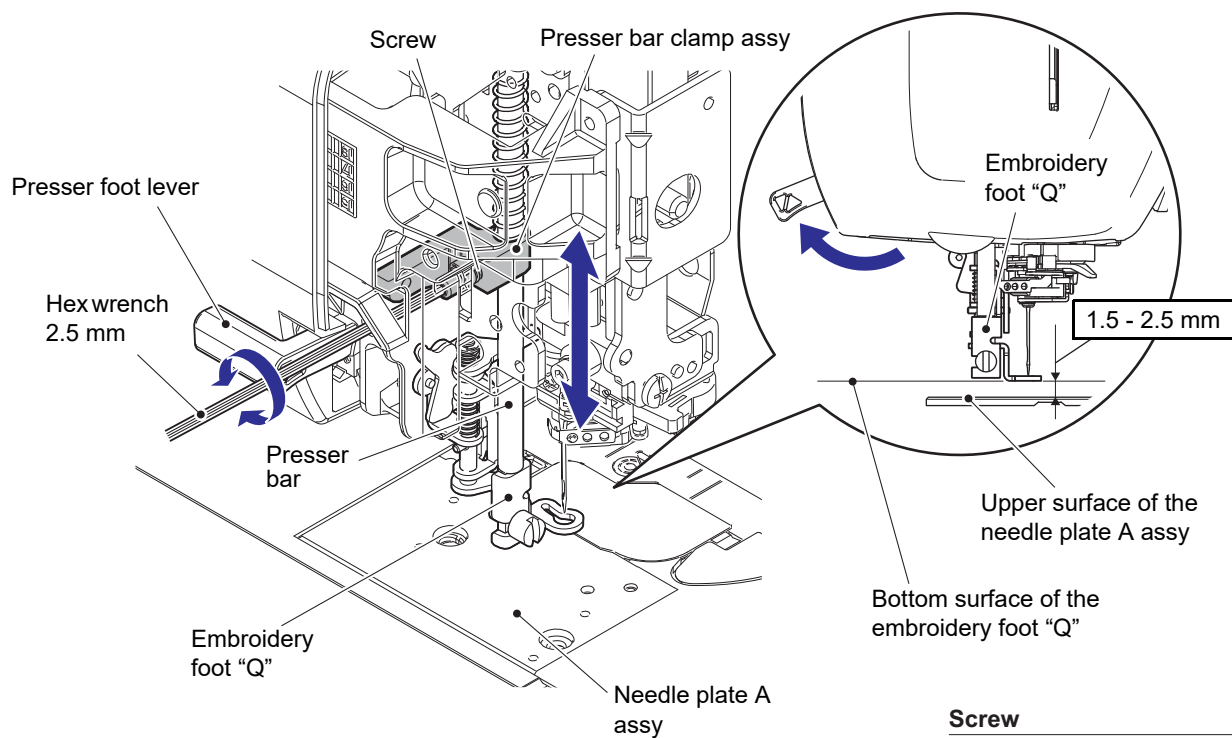
[Standard]

When the presser foot lever is lowered, clearance between the upper surface of the needle plate A assy and bottom surface of the embroidery foot "Q" should be 1.5 to 2.5 mm.



[Adjustment]

1. Remove the face plate assy. (Refer to "2-4".)
2. Attach the presser foot holder and the embroidery foot "Q".
3. Lower the presser foot lever.
4. Lower the needle bar to lower the embroidery foot "Q" to the lowest position.
5. Loosen the screw of the presser bar clamp assy.
6. Adjust the clearance between the upper surface of the needle plate A assy and the bottom surface of the embroidery foot "Q" by moving the presser bar up and down.
7. Tighten the screw of the presser bar clamp assy to secure the presser bar clamp assy to the presser bar.

**Screw**

Set Screw, Socket (CP) M5X10

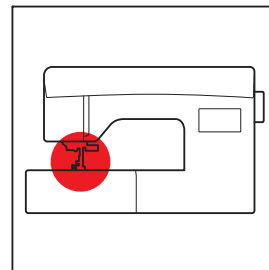


[Standard]

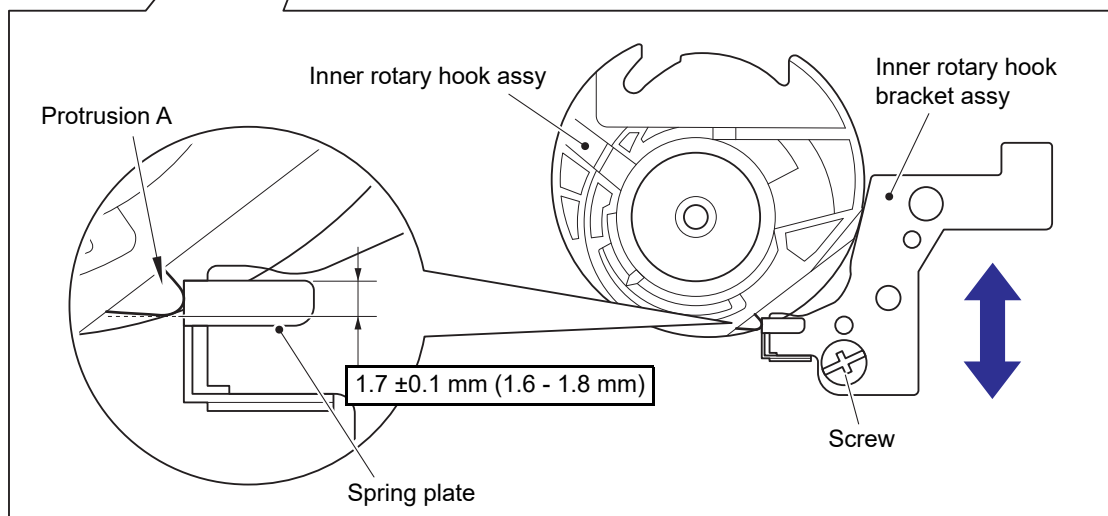
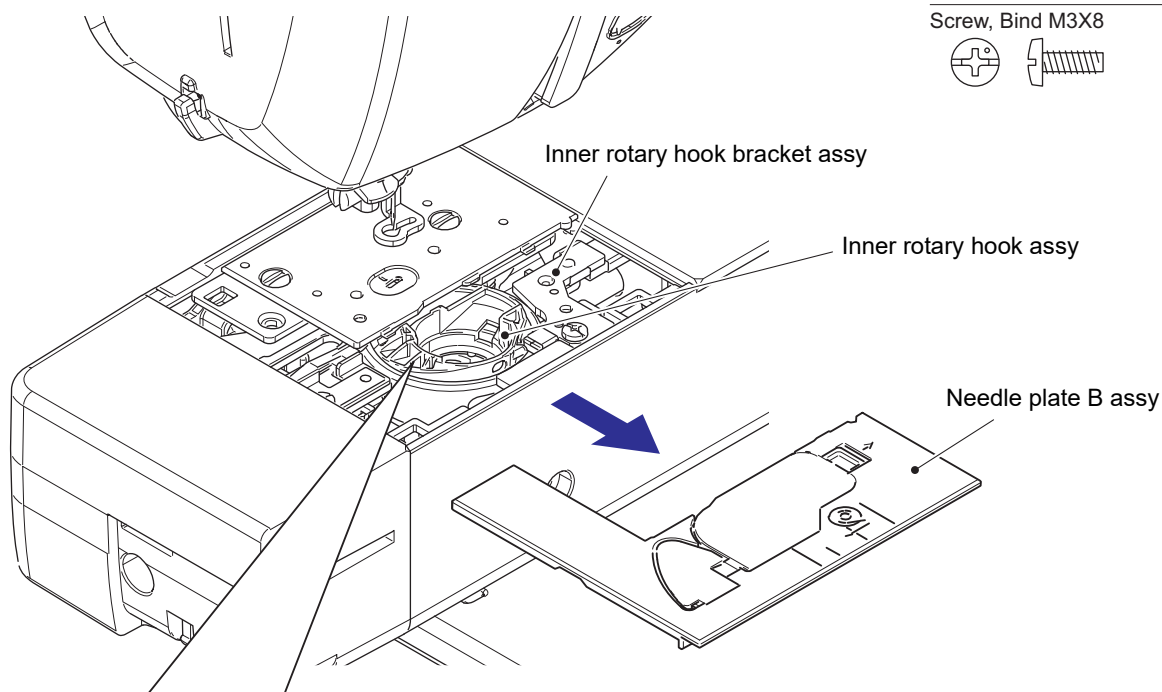
The overlap between the spring plate of the inner rotary hook bracket assy and the protrusion A of the inner rotary hook assy in the front/back direction should be 1.7 ± 0.1 mm (1.6 to 1.8 mm).

[Adjustment]

1. Remove the needle plate B assy.
2. Set the inner rotary hook assy into the outer rotary hook assy.
3. Loosen the screw of the inner rotary hook bracket assy.
4. Move the position of the inner rotary hook bracket assy (forward and back), and adjust the overlap between the spring plate of the inner rotary hook bracket assy and the protrusion A of the inner rotary hook assy.
5. Tighten the screw of the inner rotary hook bracket assy to secure the inner rotary hook bracket assy to the stopper plate block assy.

**Screw**

Screw, Bind M3X8



[Standard]

- The thread is wound to the bobbin uniformly.
- The amount of the thread wound to the bobbin is the outside diameter of the bobbin of 80 to 90%.

[Adjustment]

1. Attach the front cover and the rear cover when they are removed.
2. Set an empty bobbin to your sewing machine, wind the thread and check the winding status.
3. Loosen the screw A of the thread guide assy.
4. Move the thread guide assy up and down to adjust it so that the thread is wound to the bobbin uniformly.

***Key point**

- When the winding is biased toward the upper side of the bobbin, move the thread guide assy down. (See a in Fig.1)
 - When the winding is biased toward the lower side of the bobbin, move the thread guide assy up. (See b in Fig.1)
5. Tighten the screw A of the thread guide assy to secure the thread guide assy.

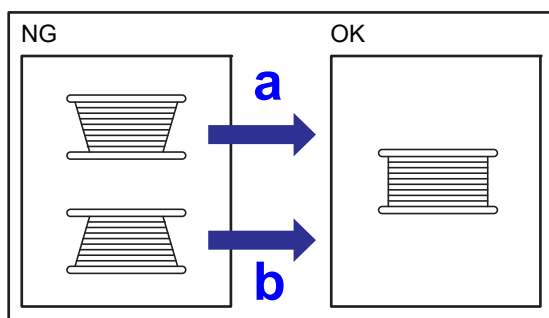
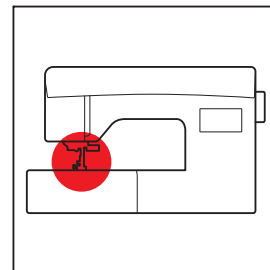
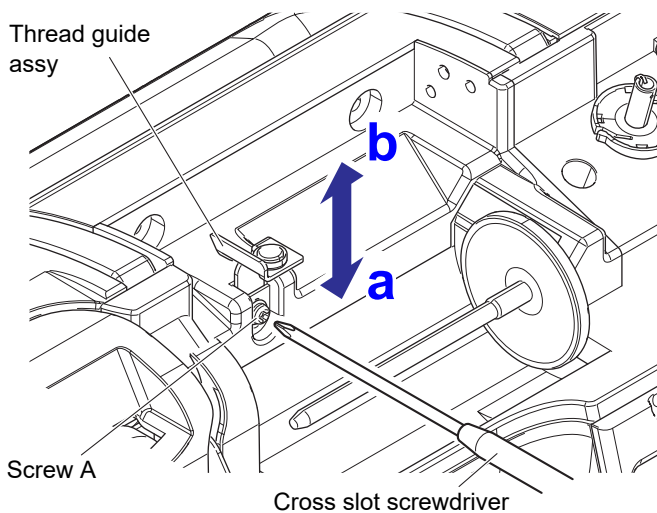
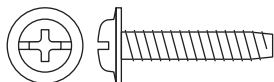


Fig.1

Screw A

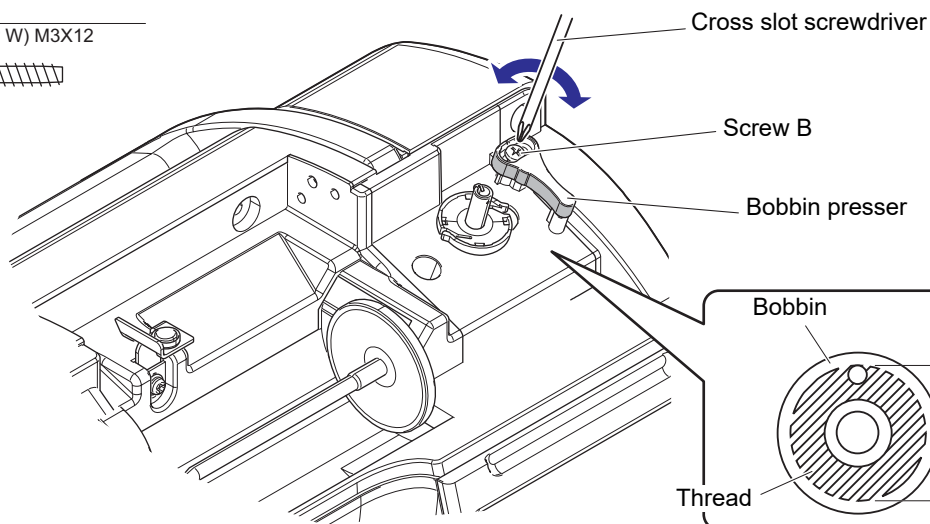
Taptite, Cup P M3X7



6. Loosen the screw B of the bobbin presser.
7. Move the bobbin presser left and right to adjust the amount of the thread wound to the bobbin.
8. Tighten the screw B of the bobbin presser to secure the bobbin presser.

Screw B

Taptite, Pan P (S/P W) M3X12

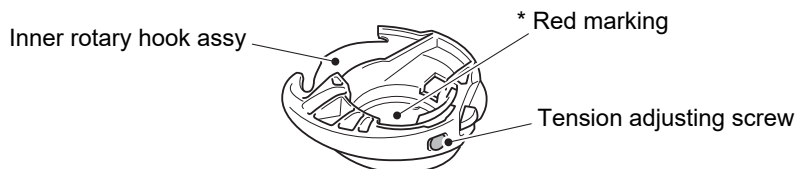
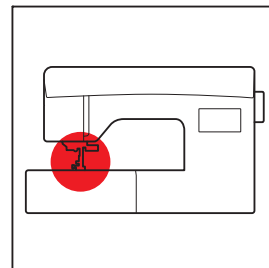


The lower thread tension shown in this adjustment is factory set. Its optimum value may vary depending on conditions of use by user.

[Standard]

When the schappe spun thread #90 is pulled from the inner rotary hook assy* slowly with the tension gauge, the thread tension should be 0.17 to 0.25 N (17 to 25 gf).

* Inner rotary hook assy for utility stitching with red marking on the center of the bottom surface.

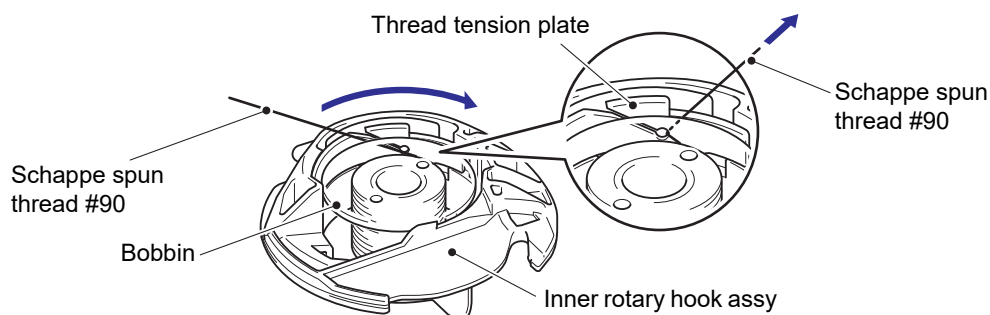


[Adjustment]

1. Remove the needle plate B assy.
2. Remove the inner rotary hook assy.
3. Set the bobbin (with the schappe spun thread #90) in the inner rotary hook assy, and pass the thread through the groove of the thread tension plate.

*Key point

- Pass the thread fully into the back of the groove of the thread tension plate.



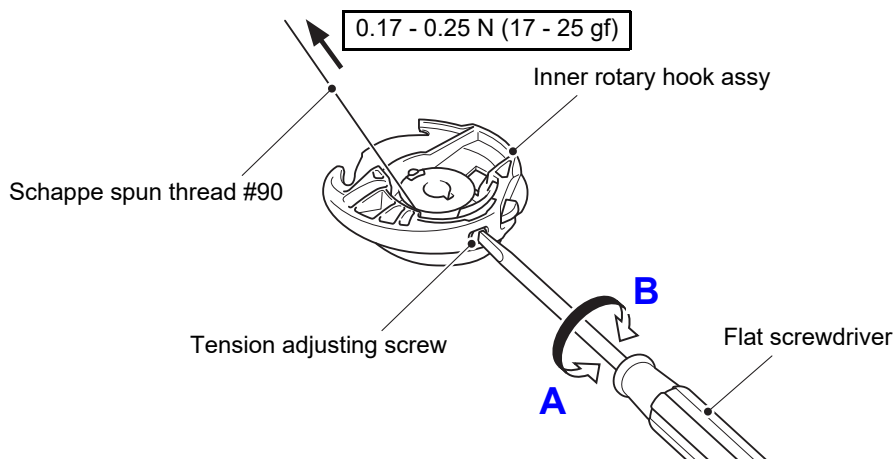
4. Pull the thread slowly from the inner rotary hook assy with the tension gauge, and check the thread tension.
5. Adjust the thread tension by turning the tension adjusting screw of the inner rotary hook assy.

*Key point

- Loosen the screw (turn to the direction of "A"). → The thread tension gets looser.
- Tighten the screw (turn to the direction of "B"). → The thread tension gets tighter.

XA9153001

Tension gauge 30 (0.3N)



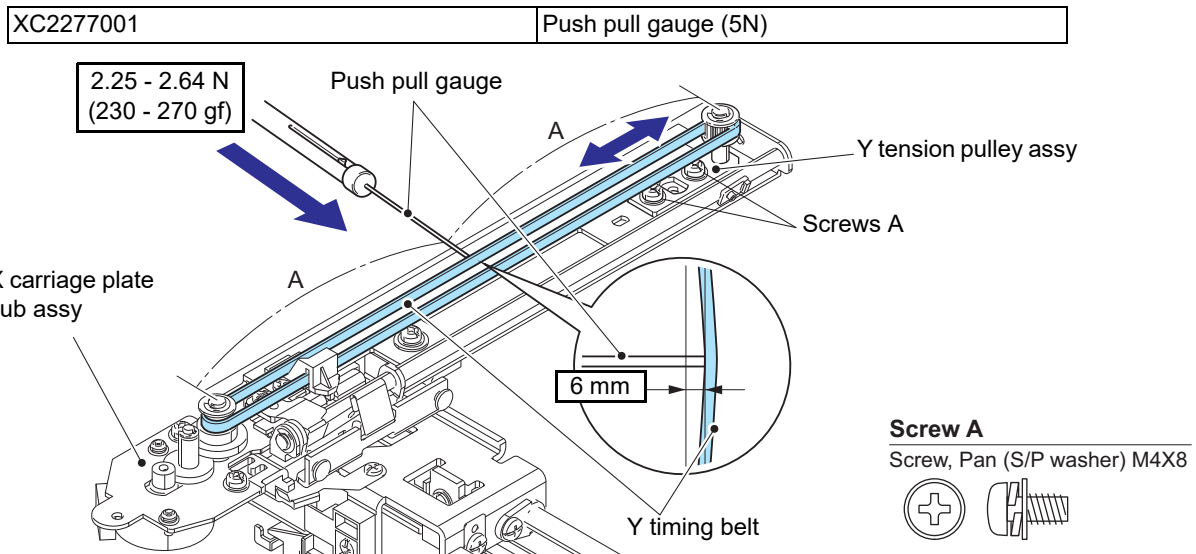
■ Y timing belt

[Standard]

The pushing force to make 6 mm slack at the center of the X timing belt should be 2.25 to 2.64 N (230 to 270 gf).

[Adjustment]

1. Loosen the 2 screws A of the Y tension pulley assy.
2. Move the Y tension pulley assy right and left to adjust the Y timing belt tension.
3. Tighten the 2 screws A of the Y tension pulley assy to secure the Y tension pulley assy to the X carriage plate sub assy.



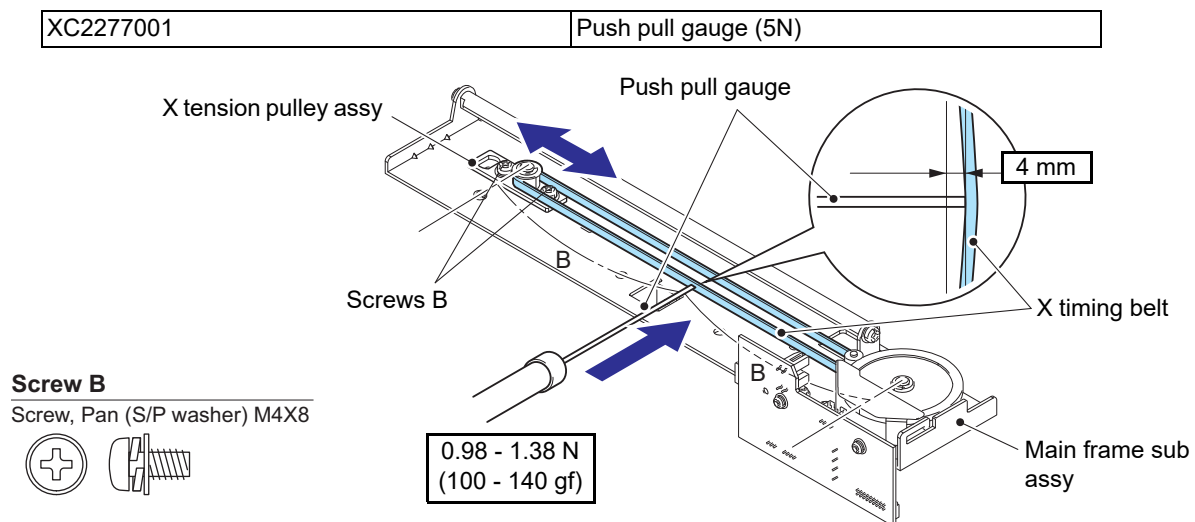
■ X timing belt

[Standard]

The pushing force to make 4 mm slack at the center of the Y timing belt should be 0.98 to 1.38 N (100 to 140 gf).

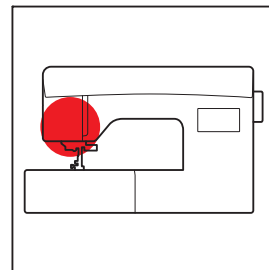
[Adjustment]

1. Loosen the 2 screws B of the X tension pulley assy.
2. Move the X tension pulley assy right and left to adjust the X timing belt tension.
3. Tighten the 2 screws B of the X tension pulley assy to secure the X tension pulley assy to the main frame sub assy.



[Standard]

In the test mode #23, the needle point should drop into the center of embroidery sheet hole when the needle is lowered by pressing the  button on the screen.



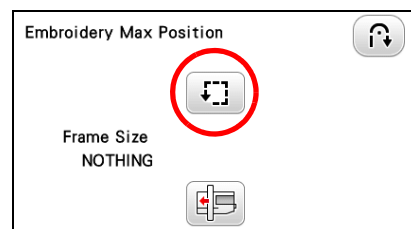
[Adjustment]

1. Remove the presser foot.
2. Attach the size 75/11 needle.
3. Turn off the machine, and then attach the embroidery unit to the machine.

***Note**

- Be sure to remove the embroidery frame from the embroidery unit beforehand.

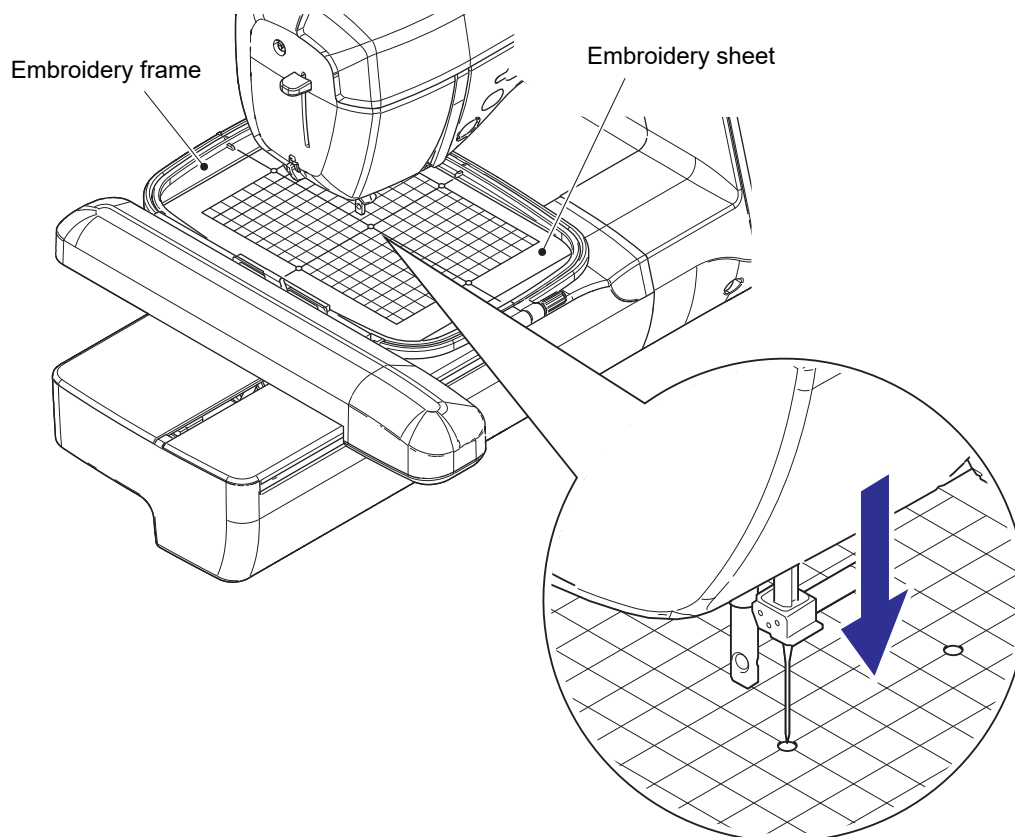
4. Start the test mode, and then select the #23 (Embroidery Max Position mode).
5. Attach the large embroidery frame (180 x 130 mm, 7 x 5 inch) to the embroidery unit.
6. Put the embroidery sheet on the embroidery frame.



7. Press the  button on the screen (carriage moves automatically).
8. Turn the pulley by hand to drop the needle point to the embroidery sheet and check the position of the needle point. (Adjustment completed)

***Key point**

- To adjust the needle point position, refer to the next page.

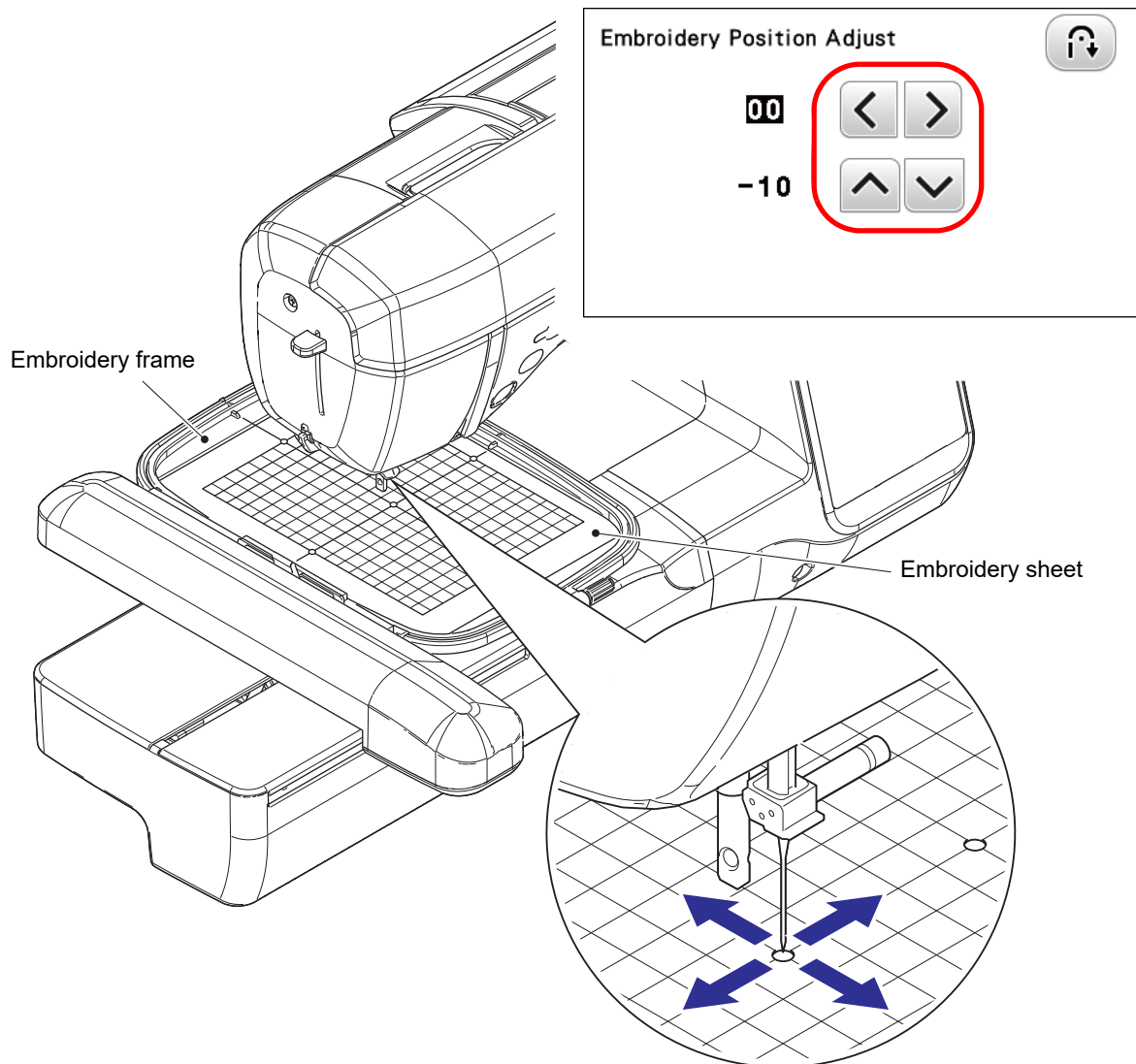


<To next page>

<From previous page>

- If the needle point doesn't drop into the hole on the center of the embroidery sheet, adjust the needle point position according to procedures below.

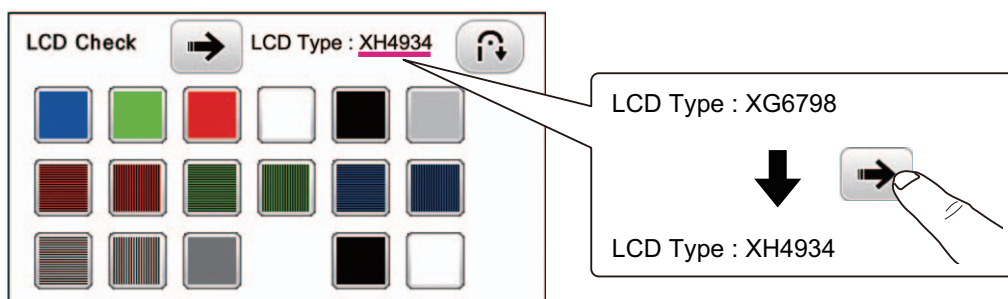
1. Select the #08 (Embroidery Position Adjust mode).
2. Press the position adjustment button on the screen to adjust the needle point position.
3. Turn off the machine to input the set value to the machine.
4. Remove the embroidery frame.
5. Go back to procedure 4 on the previous page and check the needle point position.



- This adjustment must be operated when the LCD assy or the LCD unit is replaced.
- After replacing the LCD assy or the LCD unit, upgrade the sewing machine program to the latest version (1.09 or later) before performing this adjustment.
- Refer to the service manual for the upgrade procedure.
- When the upgrade screen is not displayed even if you follow the upgrade procedure, perform this adjustment first.

[Adjustment]

1. Turn on the machine while pressing the needle position button and the thread cutter button.
 - 1-1. When the test mode selection screen is displayed:
 - Go to procedure 2.
 - 1-2. When the test mode selection screen is not displayed:
 - Keep pressing the needle position button until the buzzer sounds and then turn off the machine.
 - Go to procedure 4.
2. Select #24 (LCD check) on the screen.
3. Check the LCD Type code displayed on the screen.
 - 3-1. When "XG6798" is displayed:
 - Keep pressing the key on the screen until the buzzer sounds to display "XH4934".
 - Go to procedure 4.
 - 3-2. When "XH4934" is displayed:
 - Go to procedure 4.



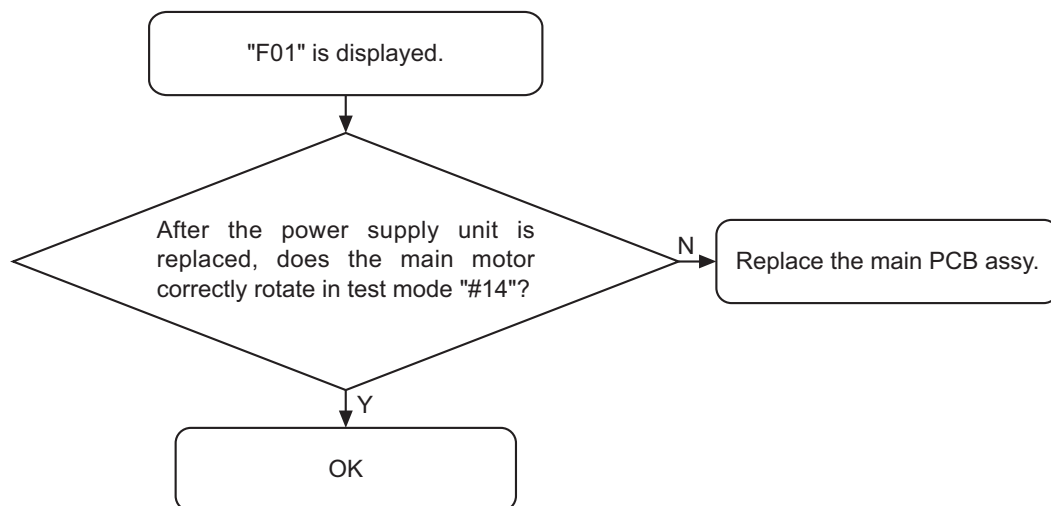
4. After turning off the machine, start the normal mode and check the screen display status.
 - 4-1. When the screen is displayed:
 - This adjustment is completed.
 - 4-2. When the screen is not displayed:
 - Return to procedure 1.

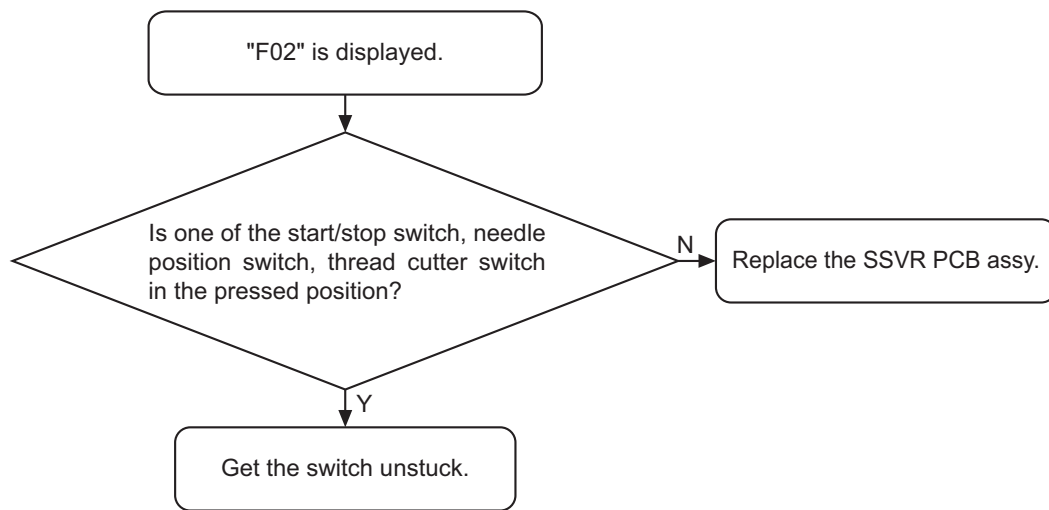
5 Troubleshooting for Electronic Parts

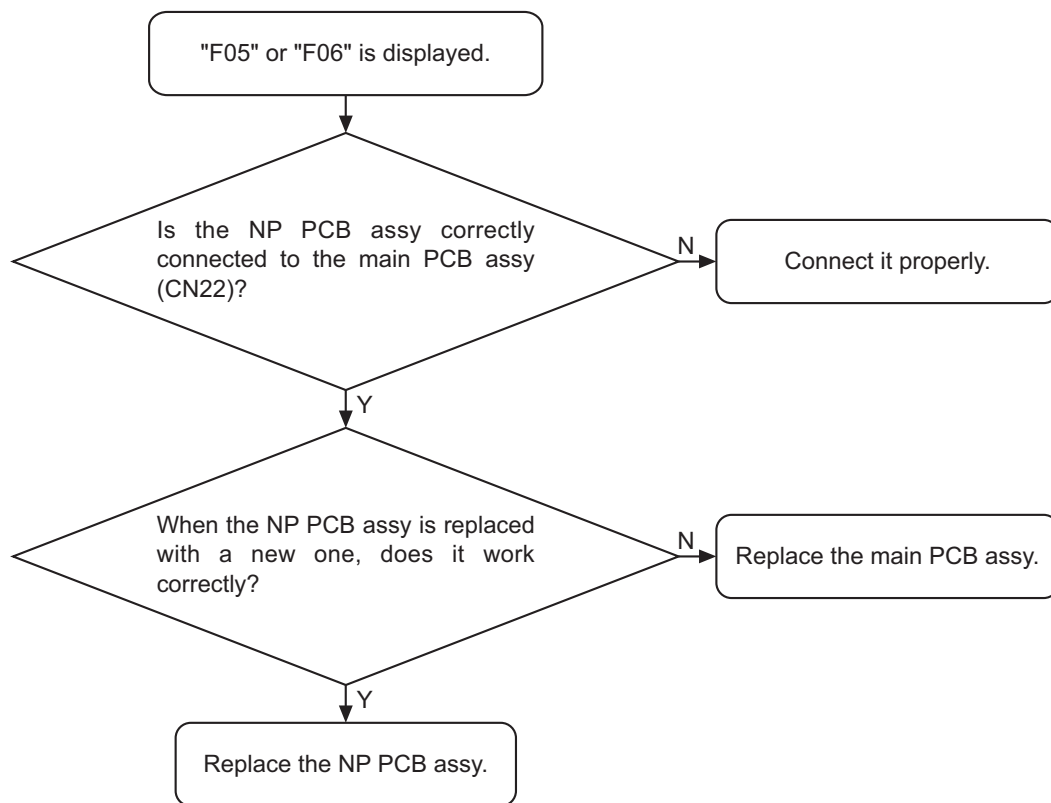
Error message list	5 - 2
Error is displayed	5 - 3
Replacement of main PCB assy or panel PCB assy	5 - 6
Display position of parts code of PCB	5 - 7

If any message listed below is displayed on the screen of the machine, an error might have been occurred in the machine.
Identify the location with the problem by following the procedures in the reference page and repair it.

#	Error Message	Refer to:
F01	MAIN MOTOR SPEED	(5 - 3)
F02	NP SW ON	(5 - 4)
↑	TC SW ON	(5 - 4)
↑	PFT SW ON	(5 - 4)
F05	SPEED SENSOR	(5 - 5)
F06	NP SENSOR BREAK	(5 - 5)







Do not replace the main PCB assy and panel PCB assy simultaneously.

The setting data required to run the sewing machine correctly is stored in both the main PCB assy and panel PCB assy. When either PCB assy is replaced, the setting data will be automatically copied from the other to the new PCB assy.

If you replace the main PCB assy and panel PCB assy simultaneously, the setting data stored in the sewing machine cannot be copied to the new PCBs, resulting in malfunction of the sewing machine. When both PCB assies need to be replaced, be sure to replace them one at a time.

When the main PCB assy or panel PCB assy is replaced, the setting data stored in the sewing machine will be automatically copied to the new PCB. However, the screen shown in Fig. 1 may appear depending on the new PCB. In that event, follow the steps below to complete copying correctly.

1. Select "Main PC Board" 1 when the main PCB assy was replaced, or select "Panel PC Board" 2 when the panel PCB assy was replaced. (Fig. 1)
"COPYING *** To Machine" appears on the screen and the machine starts copying the setting data stored in the machine automatically.

***Note 1**

- Do not select a PCB other than from the one that has been replaced.
The setting data stored in the sewing machine cannot be copied correctly, resulting in malfunction of the sewing machine.

***Note 2**

- Do not turn OFF the power of the sewing machine while the "COPYING *** To Machine" is displayed. Do not touch any button or touch panel of the sewing machine.
The setting data stored in the sewing machine cannot be copied correctly, resulting in malfunction of the sewing machine.

2. When copying the setting data is completed, the sewing machine restarts automatically.
* Replacement of the PCB assy is completed.

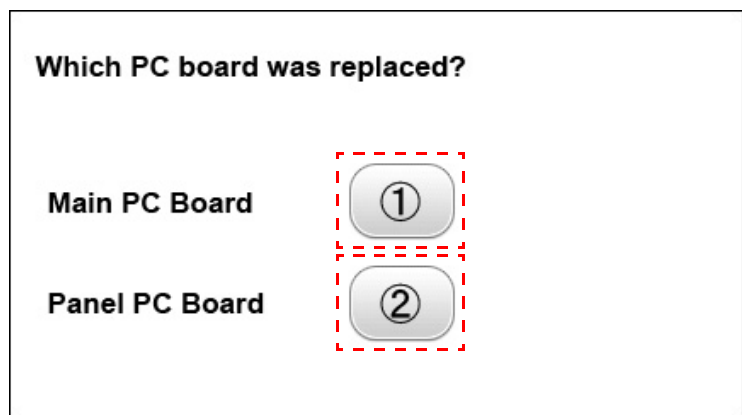
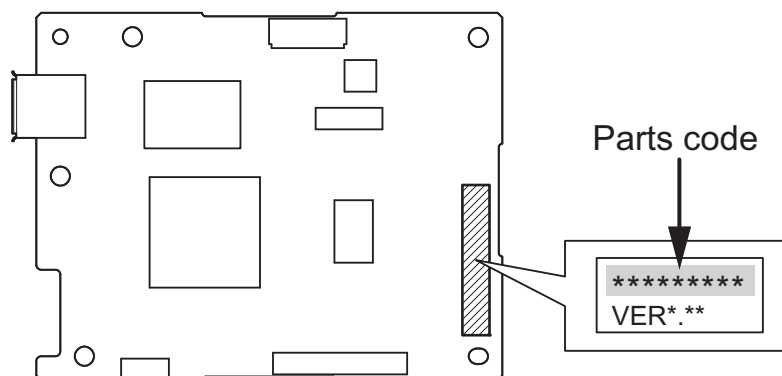


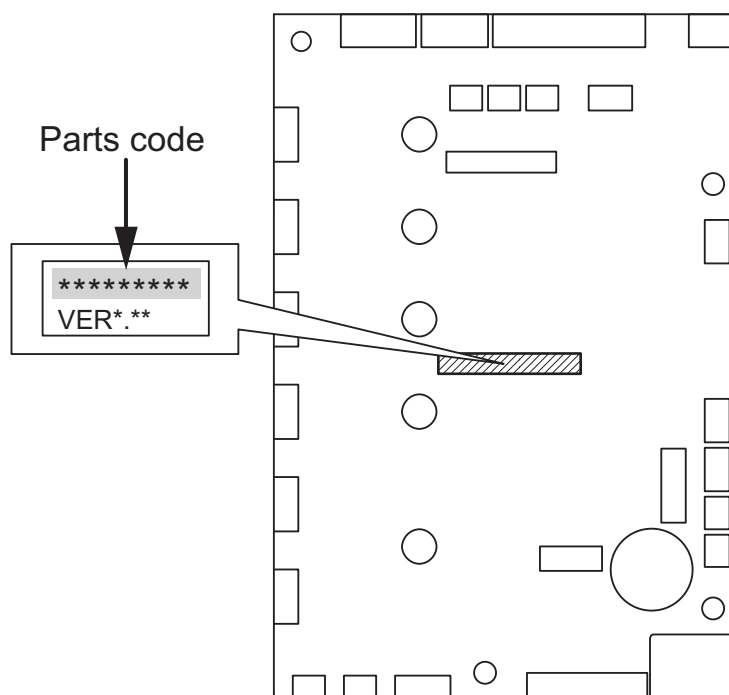
Fig. 1

* Check the part code of the PCB in the parts list and replace it with an appropriate PCB.

■ Panel PCB



■ Main PCB



6 Maintenance

How to reset counter of the maintenance	6 - 2
Necessary grease & oil	6 - 3
Maintenance point.....	6 - 4

When the operating time of the machine reaches 500 hours, the maintenance message (MSG) will be displayed on the LCD. And then do the maintenance according to the instructions of 6-4 to 6-7, and finally reset the hour counter according to the following instructions.

***Key point**

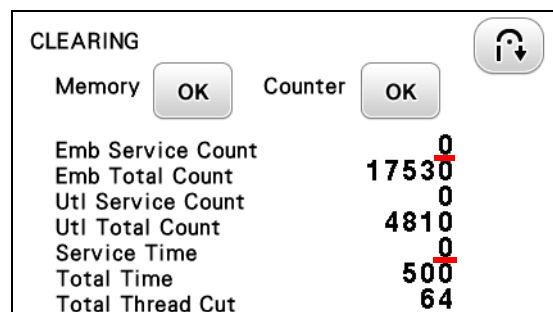
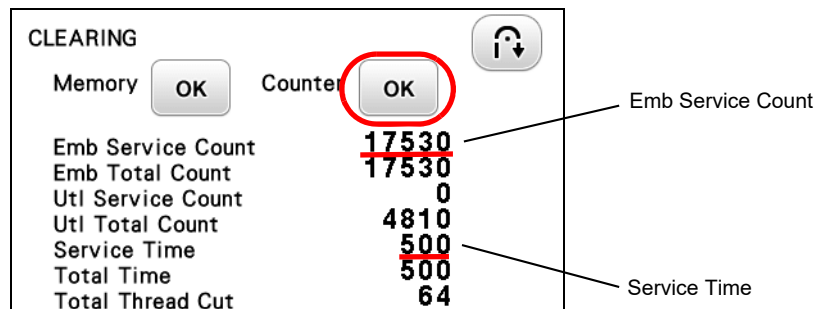
- The MSG (shown right) will appear on the LCD when the machine is turned on after an hour counter reaches 500 hours.
- The MSG appears up to 3 times, and will not come up when the machine is turned on from the 4th time.
- If an hour counter is still not reset (any maintenance has not been done) at 500 hours, the MSG will come up again at 600 hours and 700 hours (also up to 3 times each).
- If an hour counter reaches 1000 hours, the MSG will appear on the LCD every time when the machine is turned on until the hour counter is reset.

Preventive maintenance is recommended.

OK

How to reset counter

1. Start the test mode, and then select the #19 (Clearing memory/Clearing counter mode).
2. Reset the “Emb Service Count” and “Service Time” by pressing the **OK** button next to the “Counter” on the screen.



Grease



1) Name: MOLYKOTE EM30L
Part #: XC8385001



2) Name: EPNOC AP(N) 0
Part #: XC8387001



3) Name: MOLYKOTE M DISPERSION
Part #: XC8386001

Oil

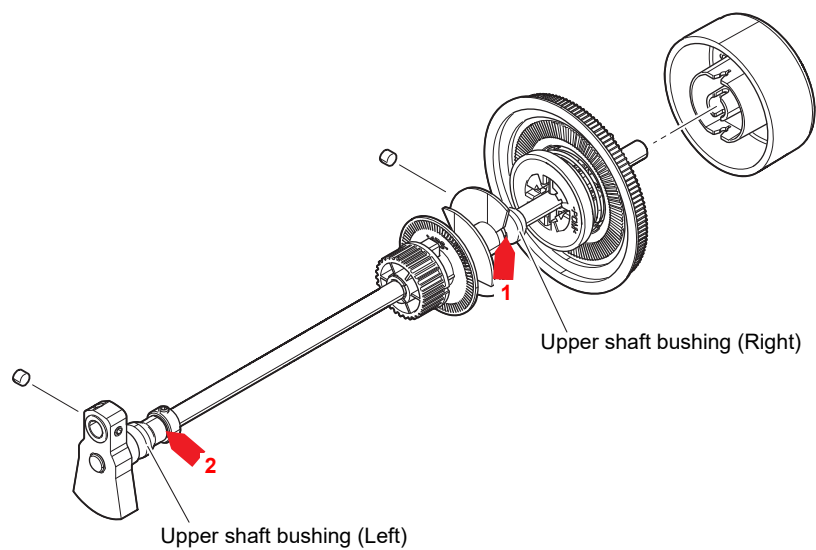


4) Name: FBK OIL RO 100
Part #: XC8388001



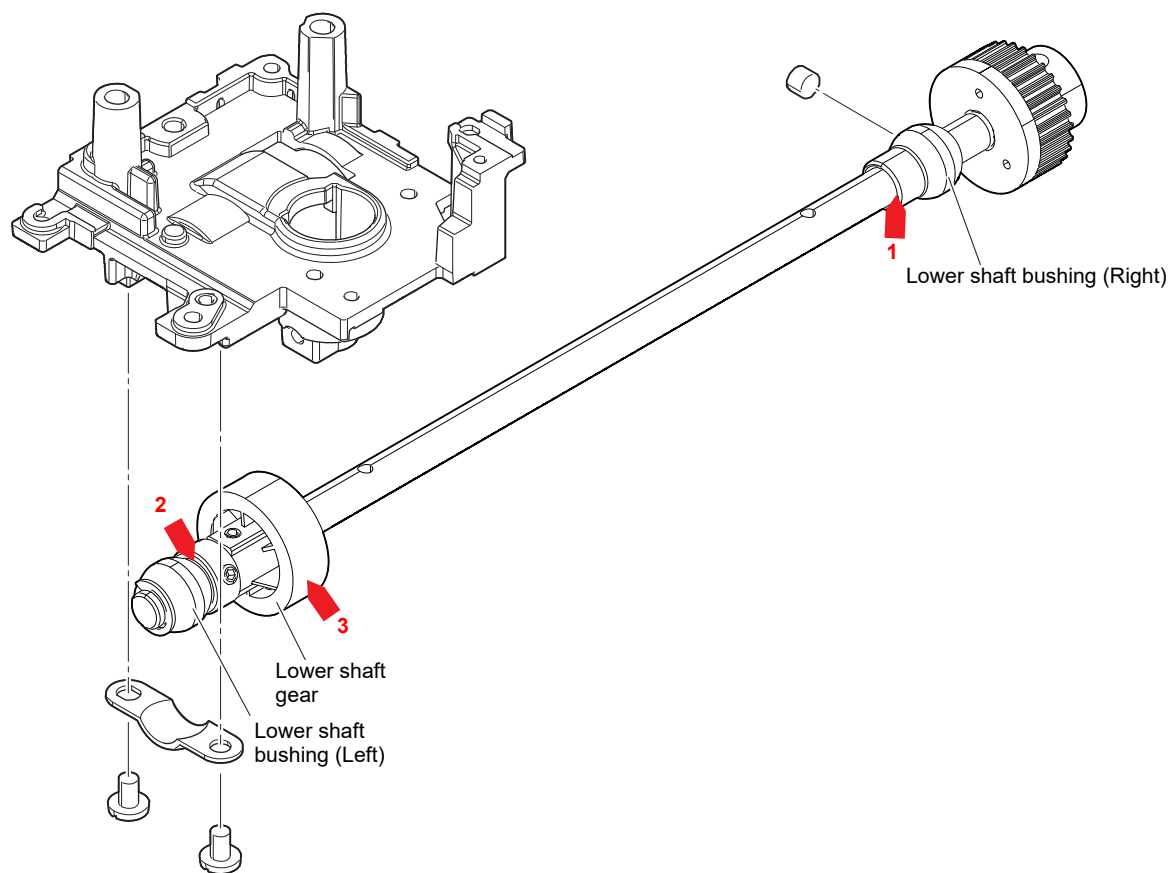
5) Name: OILER
Part #: XZ0206051

1. Upper shaft unit



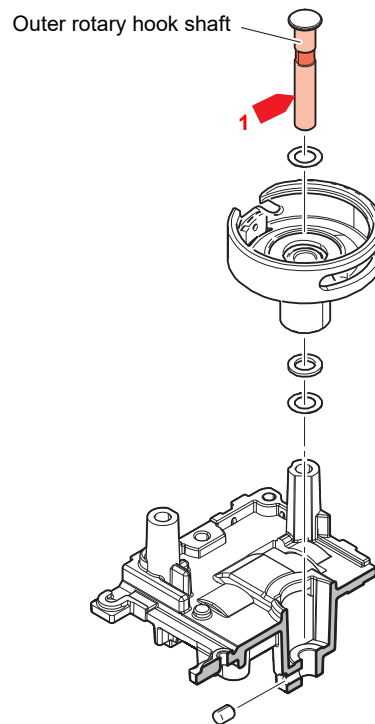
Lubrication point			Lubricating oil type	Quantity of lubrication
1	Upper shaft bushing (Right)	1 place	FBK OIL RO 100	1 - 2 drops
2	Upper shaft bushing (Left)	1 place	FBK OIL RO 100	2 - 3 drops

2-1.Feed unit



Lubrication point			Lubricating oil type	Quantity of lubrication
1	Lower shaft bushing (Right)	1 place	FBK OIL RO 100	2 - 3 drops
2	Lower shaft bushing (Left)	1 place	FBK OIL RO 100	1 - 2 drops
3	Lower shaft gear	1 place	MOLYKOTE EM30L	5 mm diameter ball

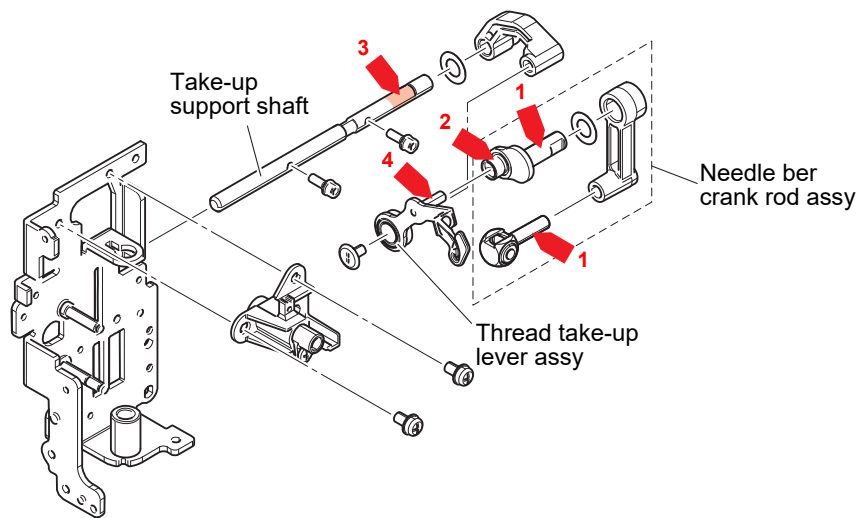
2-2.Feed unit



Lubrication point			Lubricating oil type	Quantity of lubrication
1	Outer rotary hook shaft	1 place	OILER B ASSY	1 - 2 drops *

* After loosening the screw securing the outer rotary hook shaft, lift the outer rotary hook shaft by 1 mm to make a clearance and lubricate from there.

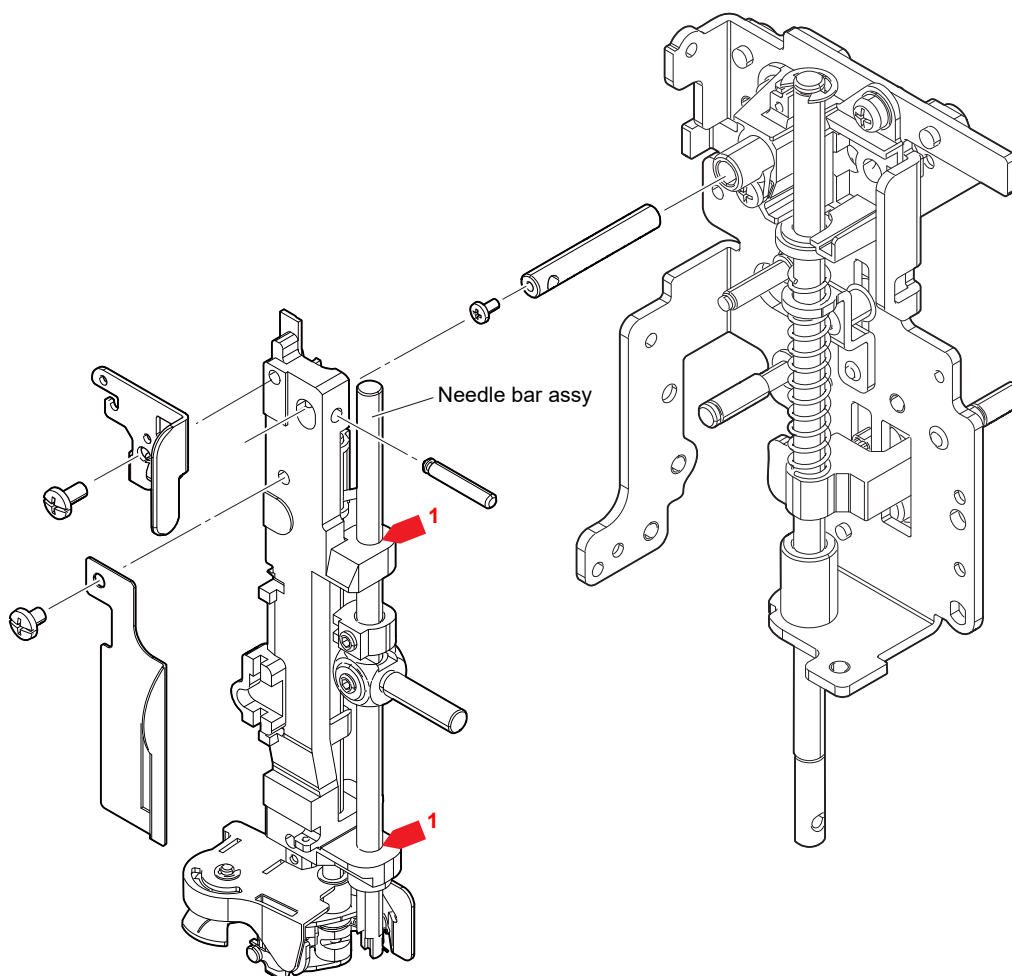
3-1. Needle bar/presser foot unit



Lubrication point			Lubricating oil type	Quantity of lubrication
1	Needle bar crank rod assy	2 places	MOLYKOTE M DISPERSION *	1 - 2 drops
2		1 place	MOLYKOTE EM30L	5 mm diameter ball
3	Take-up support shaft	1 place	MOLYKOTE EM30L	4 mm diameter ball
4	Thread take-up lever assy	1 place	MOLYKOTE EM30L	4 mm diameter ball

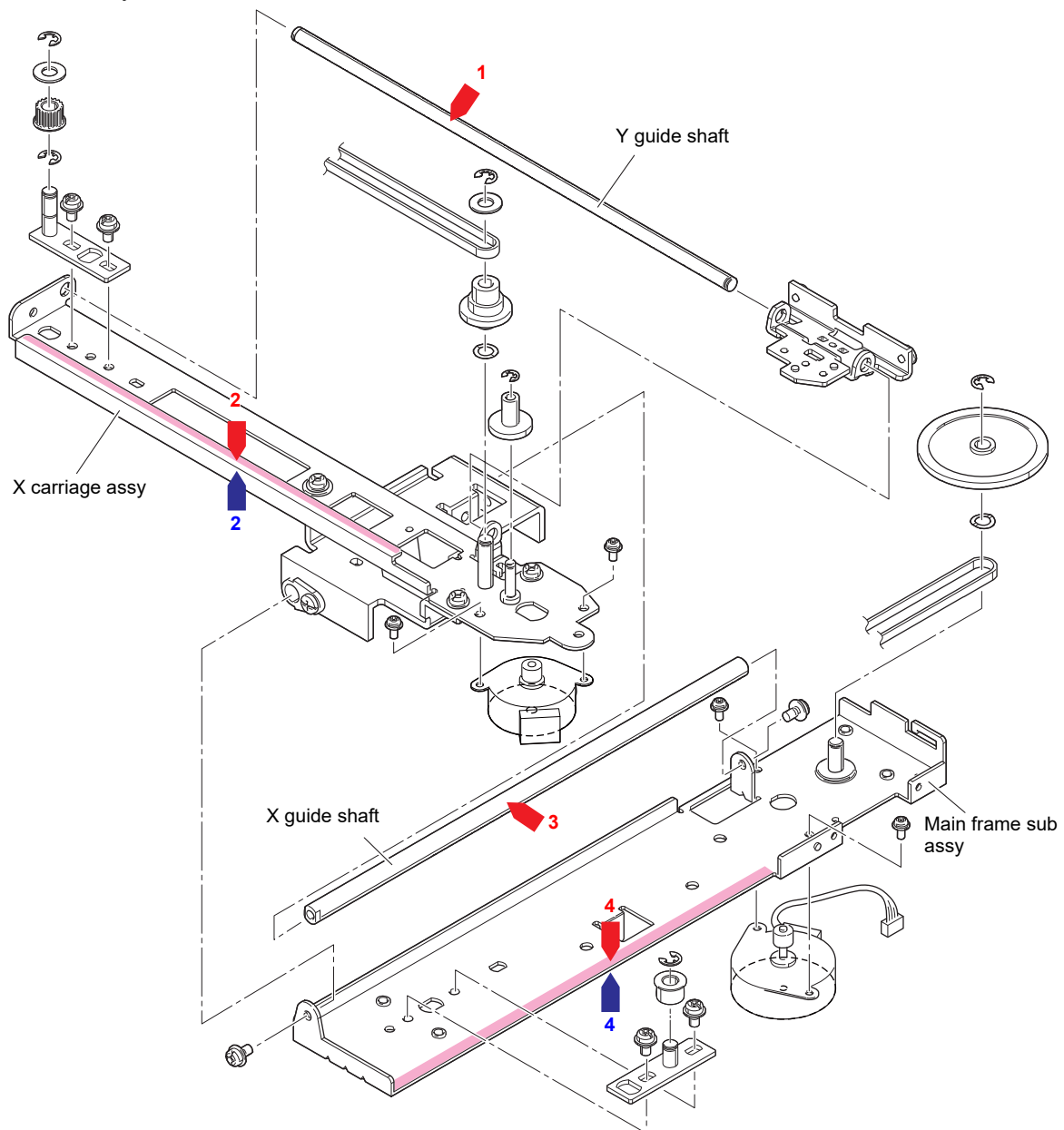
* Mix MOLYKOTE M DISPERSION and OILER B ASSY in a ratio of 1:9.

3-2.Needle bar/presser foot unit



Lubrication point		Lubricating oil type		Quantity of lubrication
1	Needle bar assy	2 places	OILER B ASSY	1 - 2 drops

4. Embroidery unit



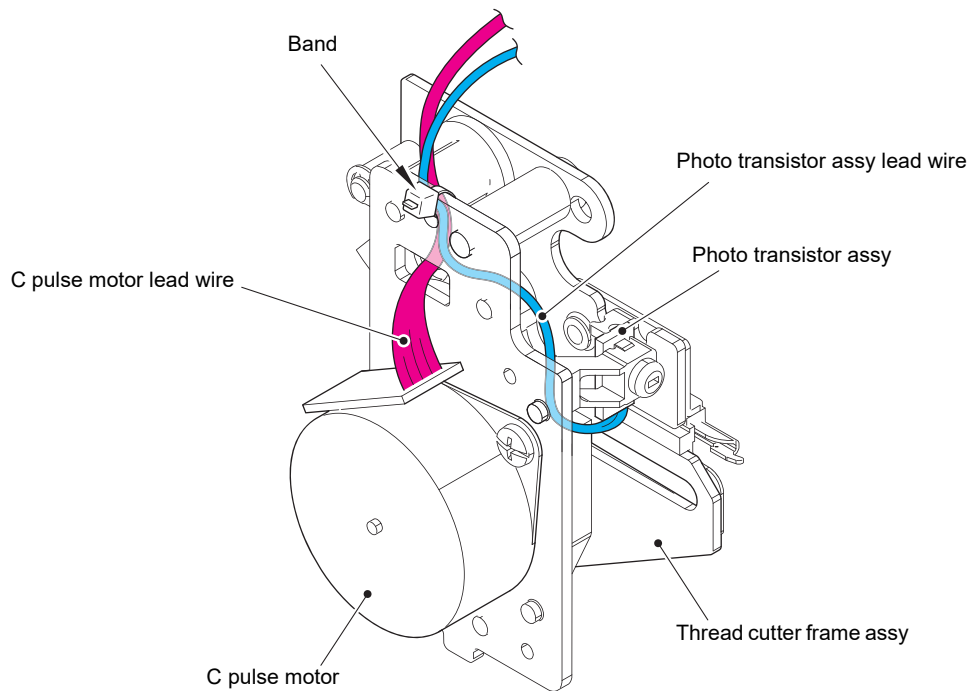
Lubrication point			Lubricating oil type	Quantity of lubrication
1	Y guide shaft	1 place	MOLYKOTE M DISPERSION *	Thinly all surface
2	X carriage assy	2 places	EPNOC AP(N)0	Thinly all surface
3	X guide shaft	1 place	MOLYKOTE M DISPERSION *	Thinly all surface
4	Main frame sub assy	2 places	EPNOC AP(N)0	Thinly all surface

* Mix MOLYKOTE M DISPERSION and OILER B ASSY in a ratio of 1:9.

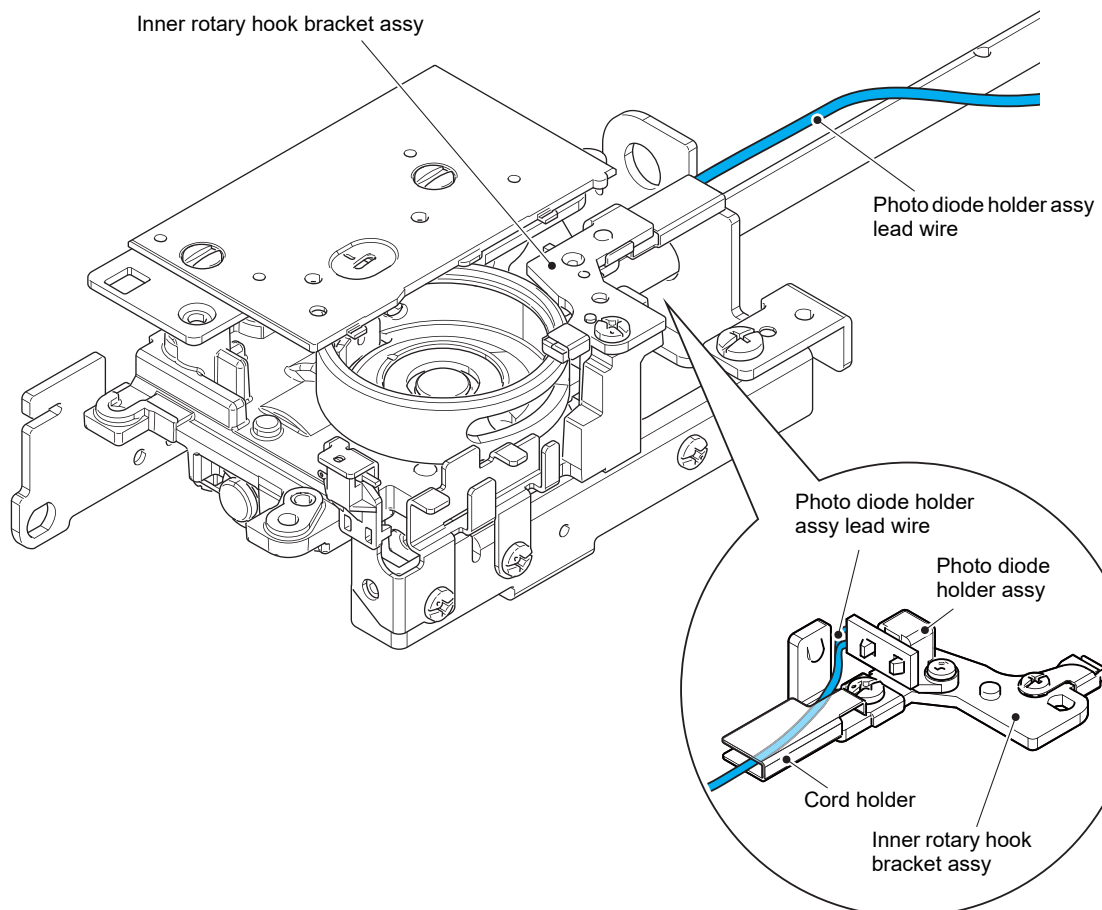
7 Special Instructions of Wiring

Module wiring	7 - 2
Main body wiring	7 - 4
Front cover wiring	7 - 13
Embroidery unit wiring	7 - 15

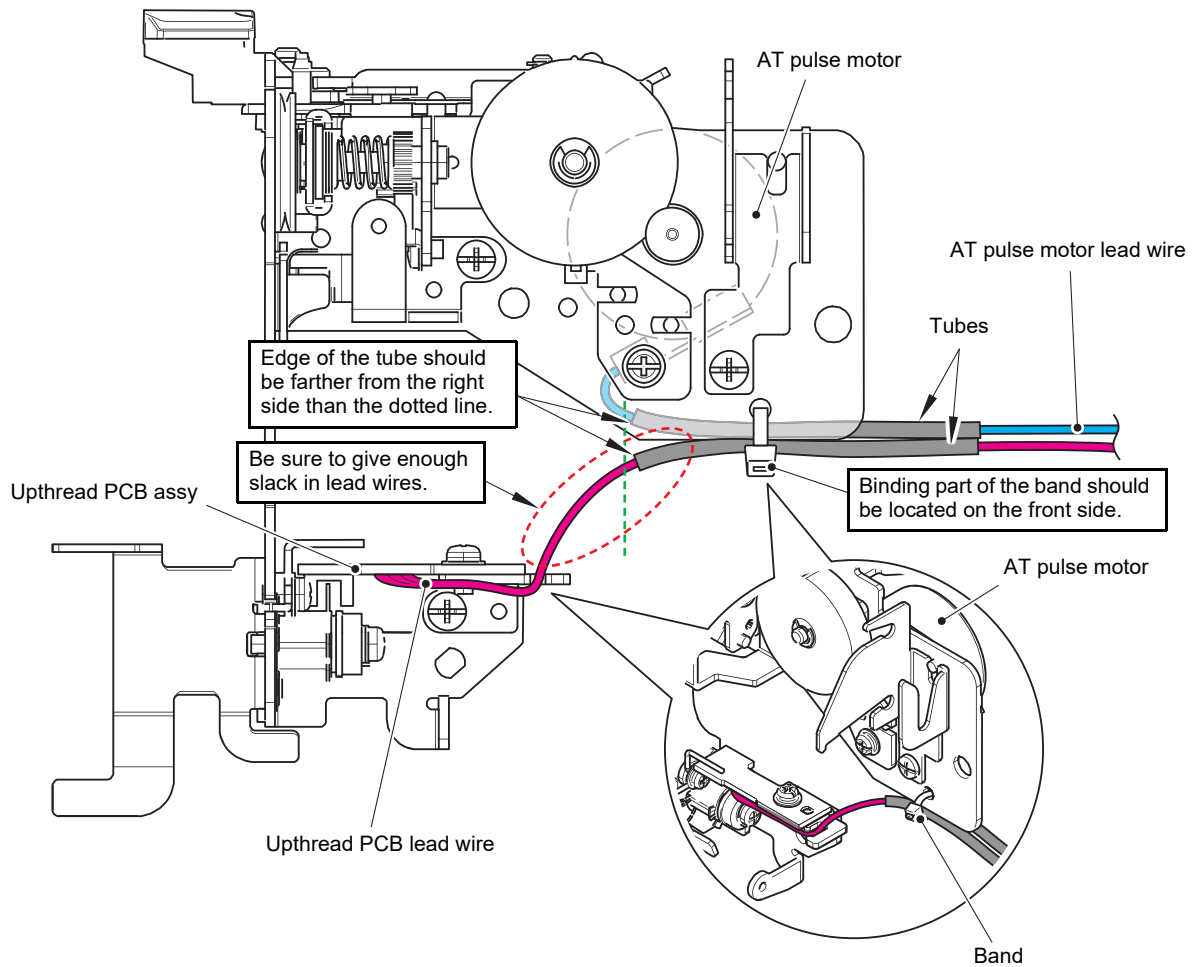
1. Thread cutter module



2. Feed module



3. Needle thread module

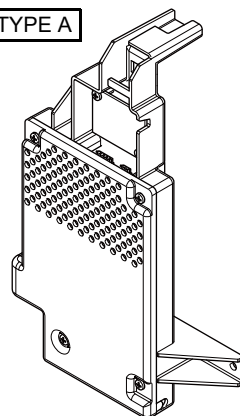


4. Power unit

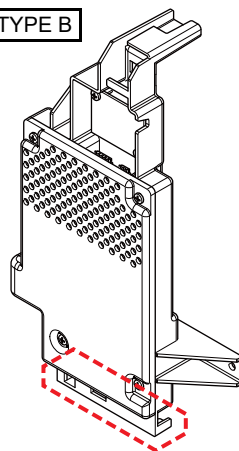
NOTE

- There are two types of power unit.
Check the shape of the lower part of the power unit and refer to wiring instructions applicable to that type.

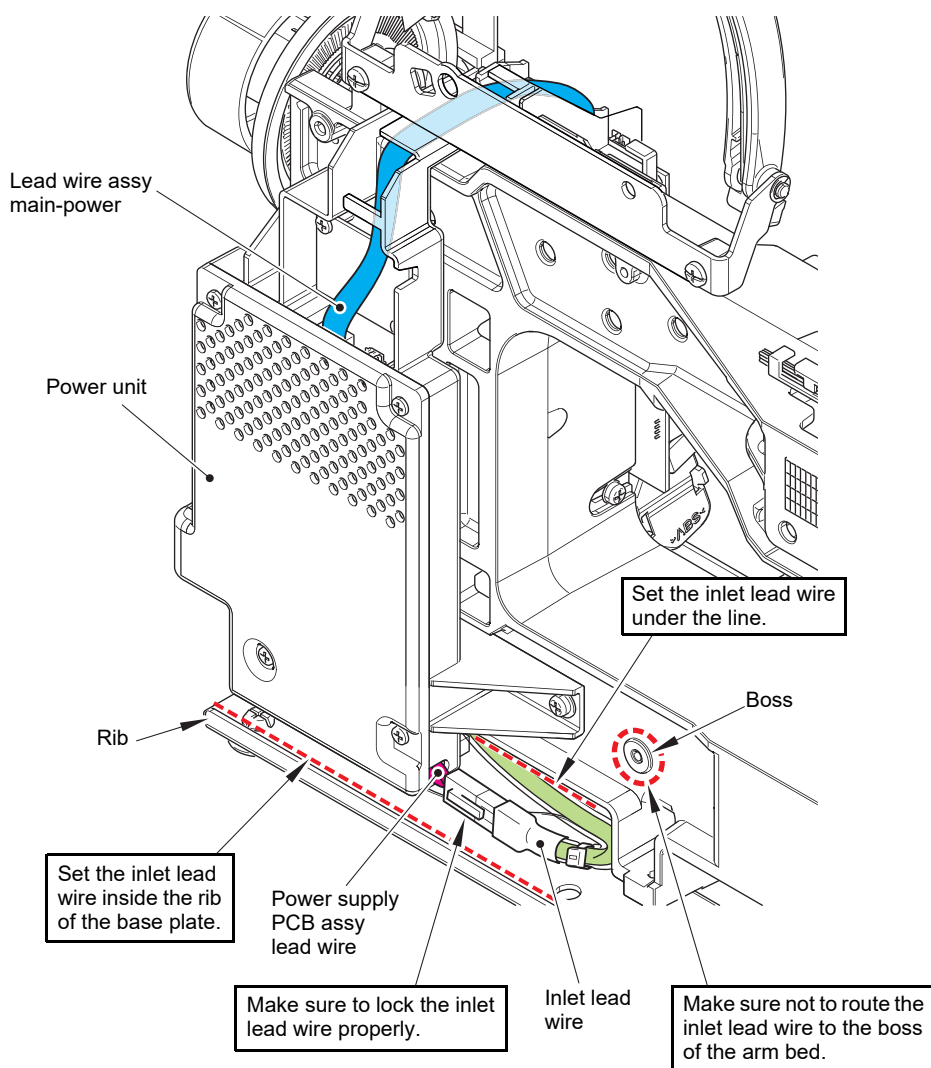
TYPE A



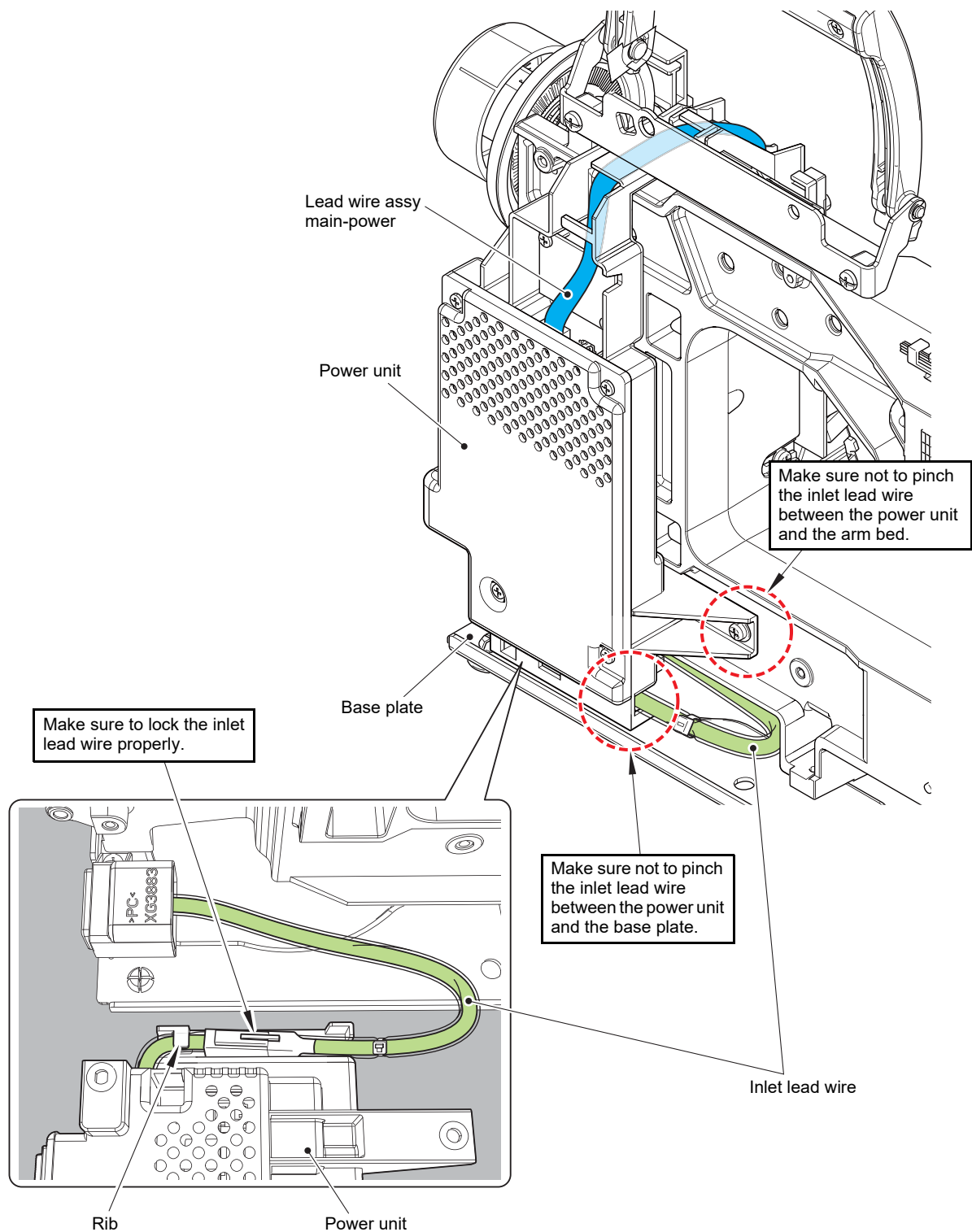
TYPE B



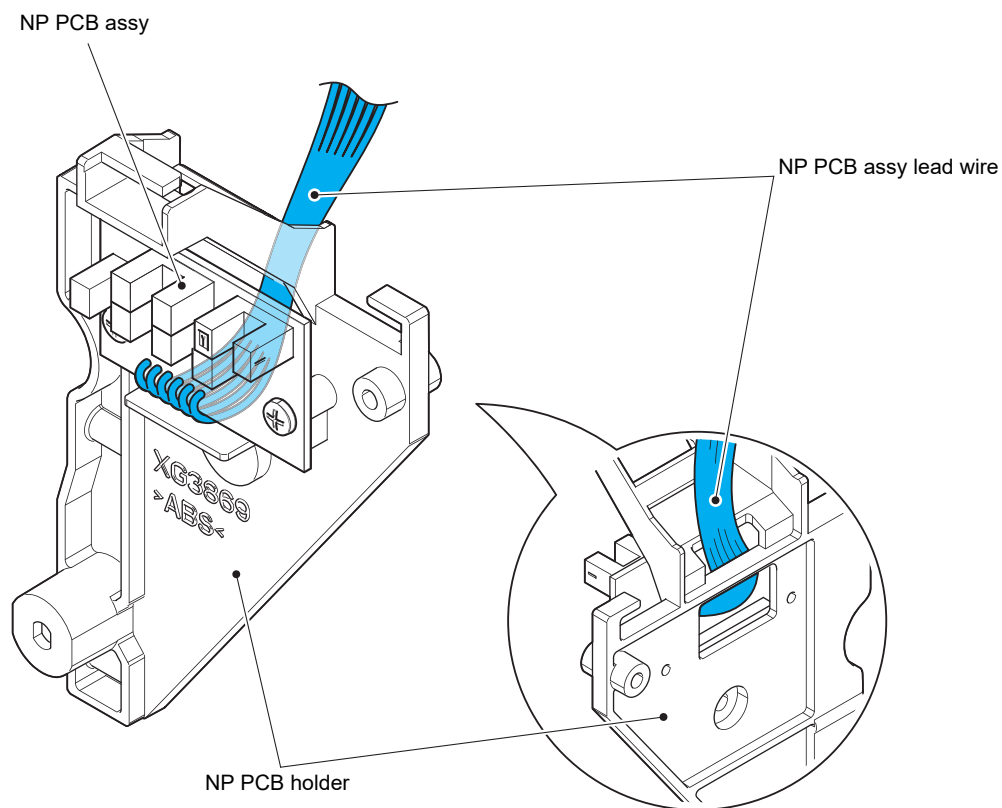
■ TYPE A



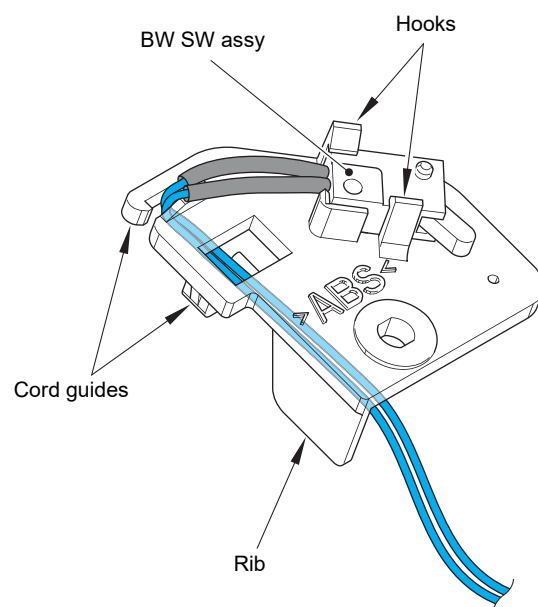
■ TYPE B



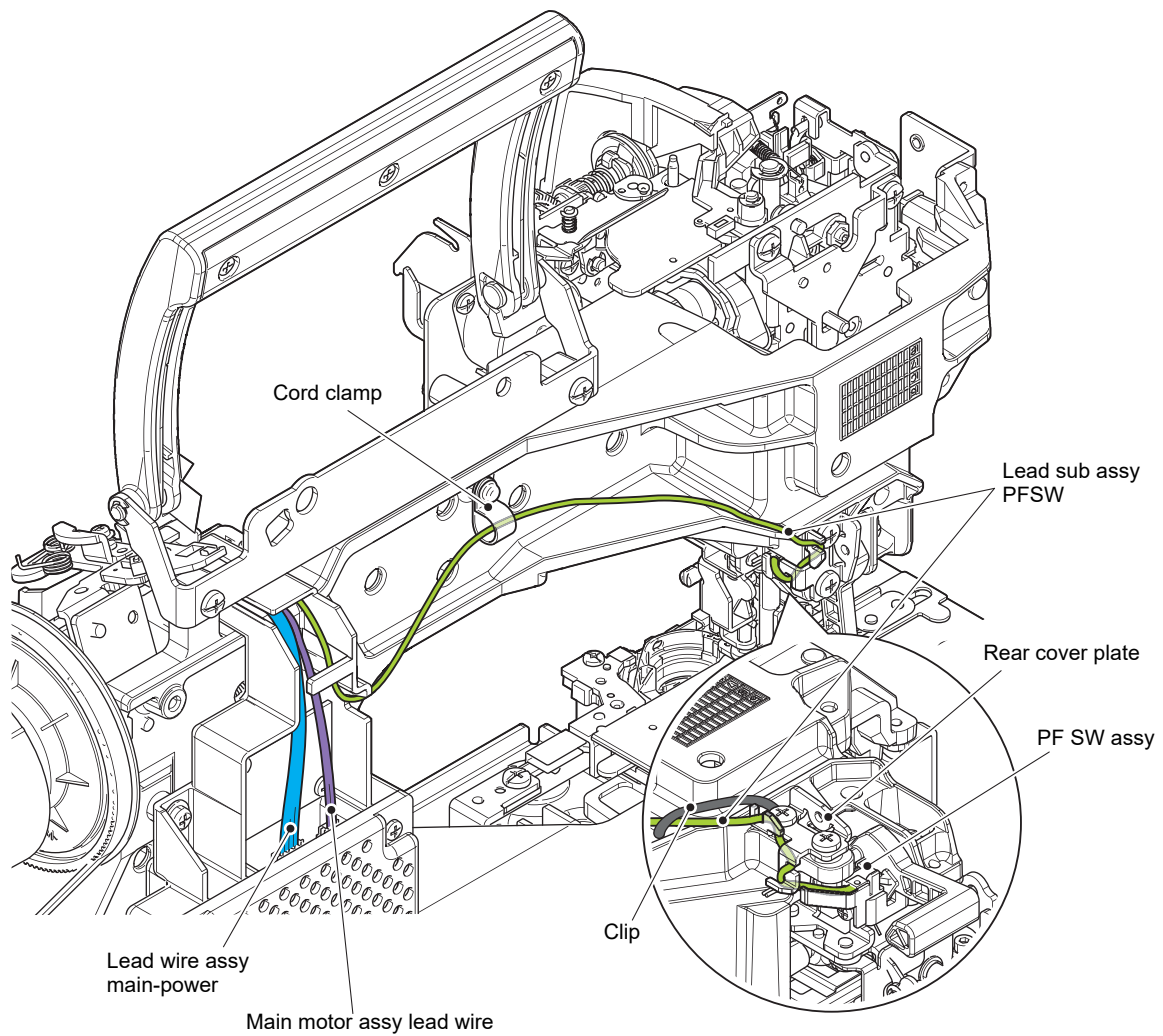
5. NP PCB assy



6. BW SW assy



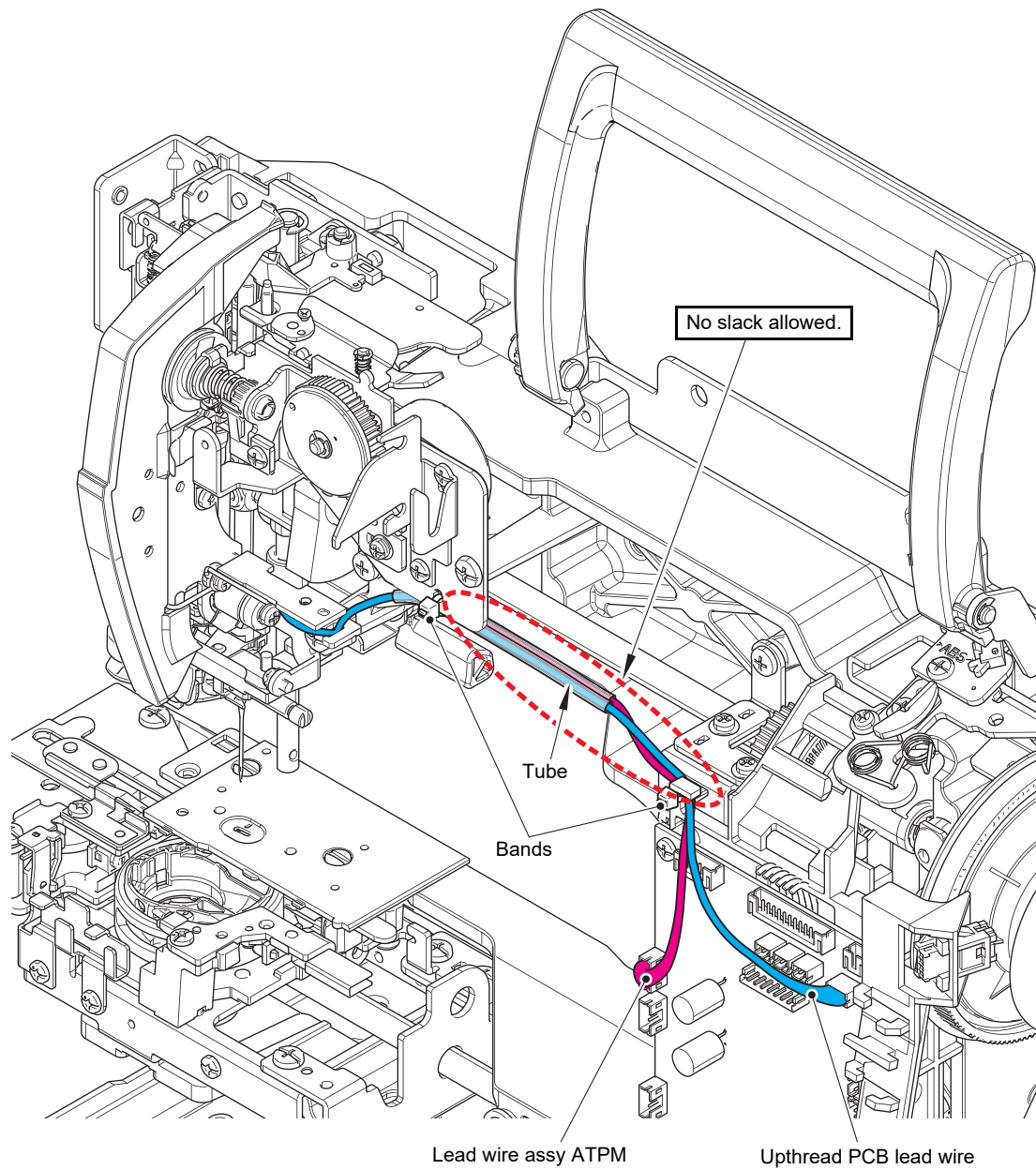
7. Presser module



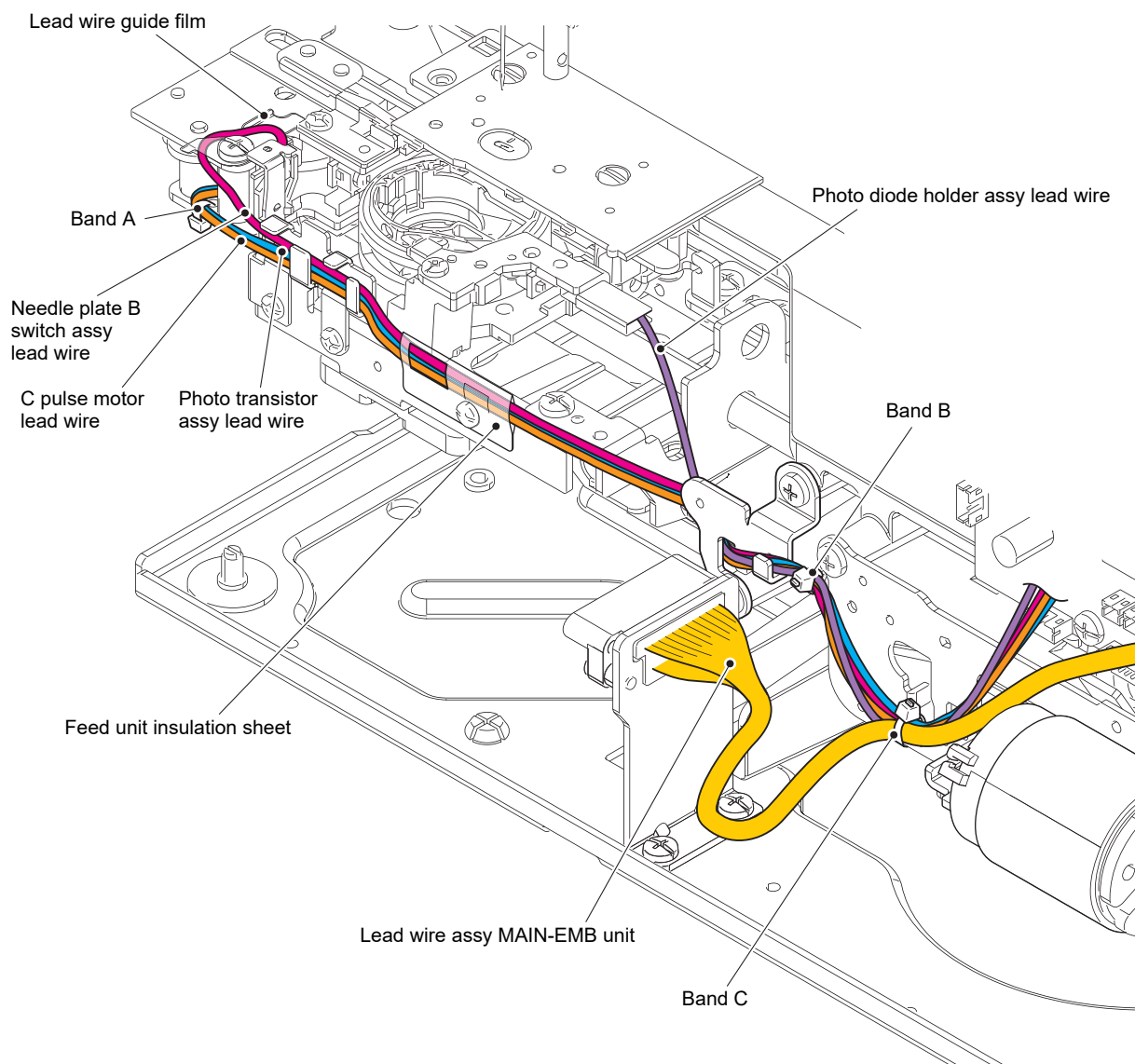
Lead wire to be bound
with the clip and the cord clamp:

- Lead sub assy PFSW

8. Thread unit



9. Thread cutter module / Feed module



Lead wires to be bound with band A:

- C pulse motor lead wire
- Photo transistor assy lead wire

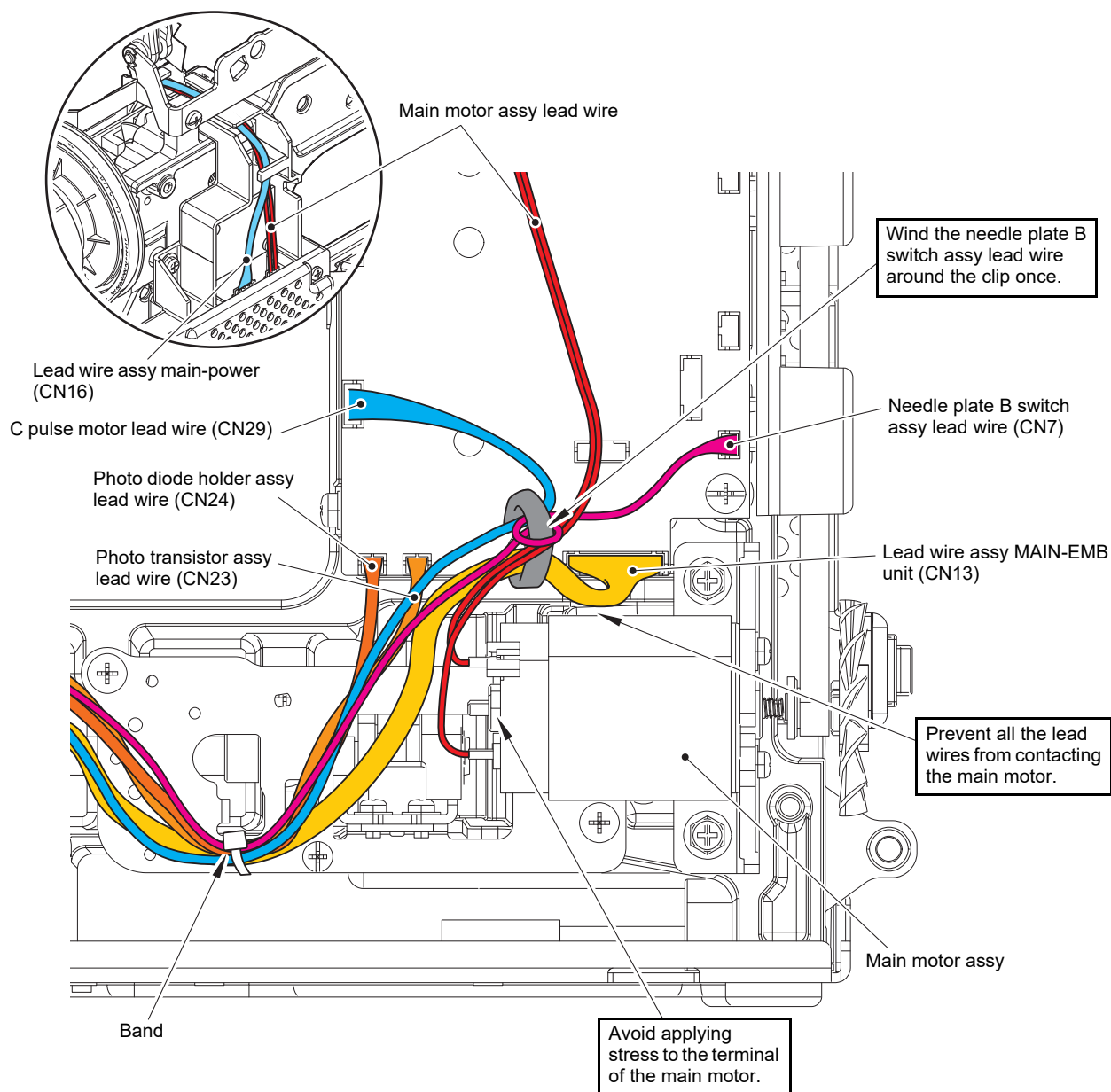
Lead wires to be bound with band B:

- Needle plate B switch assy lead wire
- Photo transistor assy lead wire
- C pulse motor lead wire
- Photo diode holder assy lead wire

Lead wires to be bound with band C:

- Needle plate B switch assy lead wire
- Photo transistor assy lead wire
- C pulse motor lead wire
- Photo diode holder assy lead wire
- Lead wire assy MAIN-EMB unit

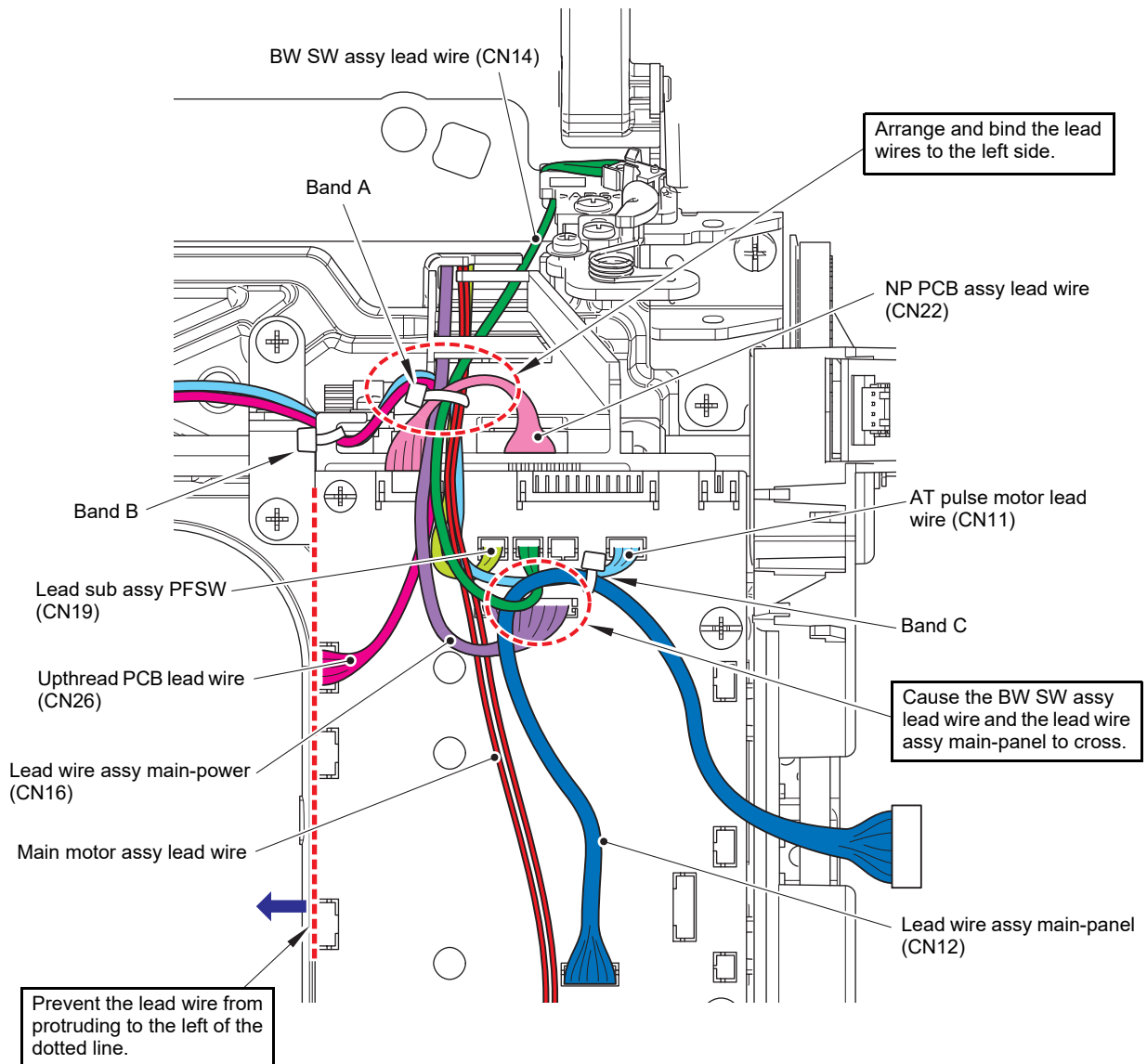
10. Lower side of Main PCB



Lead wires to be secured with clip:

- Needle plate B switch assy lead wire (CN7)
- C pulse motor lead wire (CN29)
- Lead wire assy MAIN-EMB unit (CN13)
- Main motor assy lead wire

11.Upper side of Main PCB



Lead wires to be bound with band A:

- Lead sub Assy PFSW (CN19)
- Lead wire Assy main-power (CN16)
- NP PCB Assy lead wire (CN22)
- BW SW Assy lead wire (CN14)
- AT pulse motor lead wire (CN11)
- Upthread PCB lead wire (CN26)
- Main motor Assy lead wire

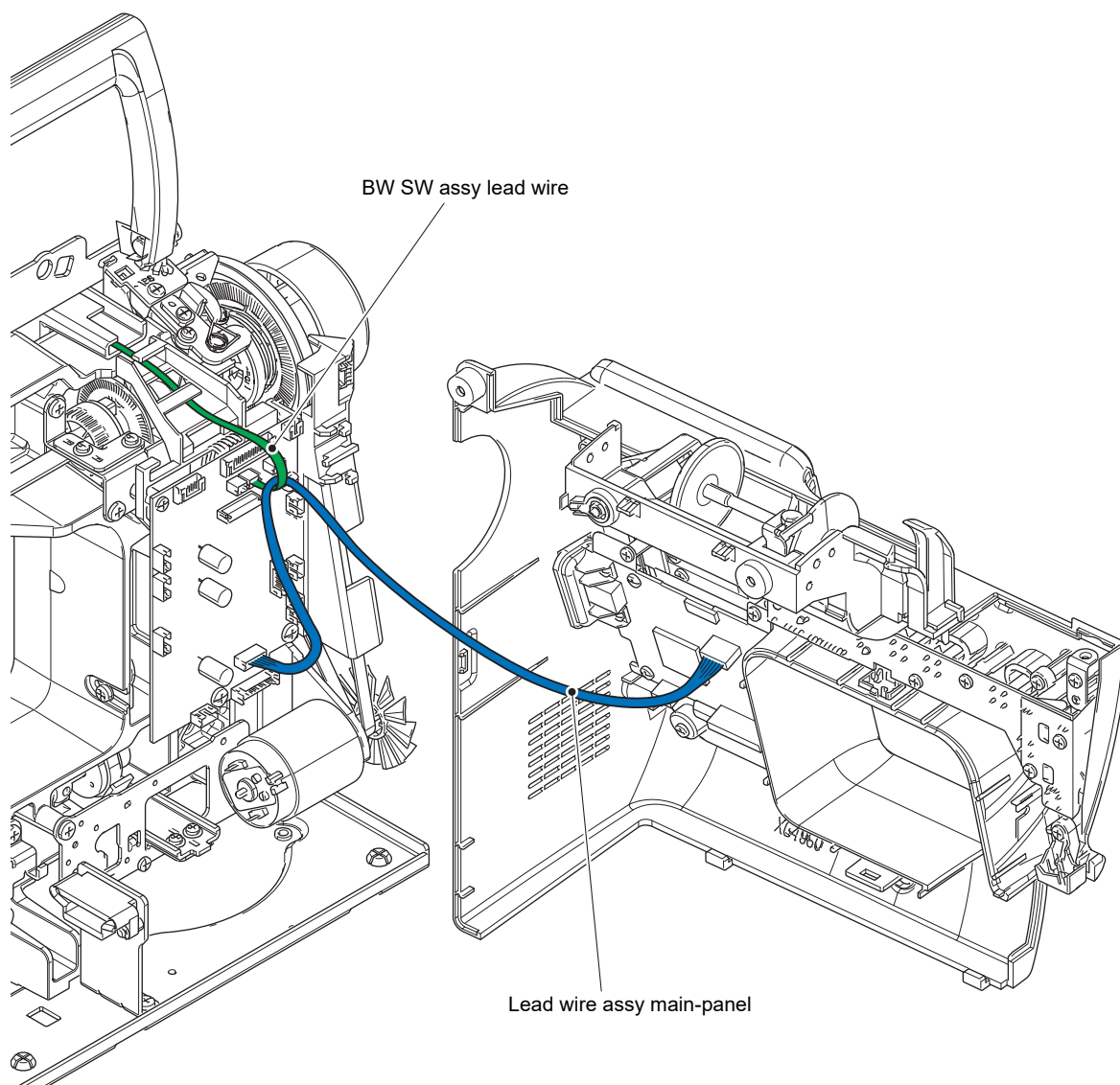
Lead wires to be bound with band B:

- Upthread PCB lead wire (CN26)
- AT pulse motor lead wire (CN11)

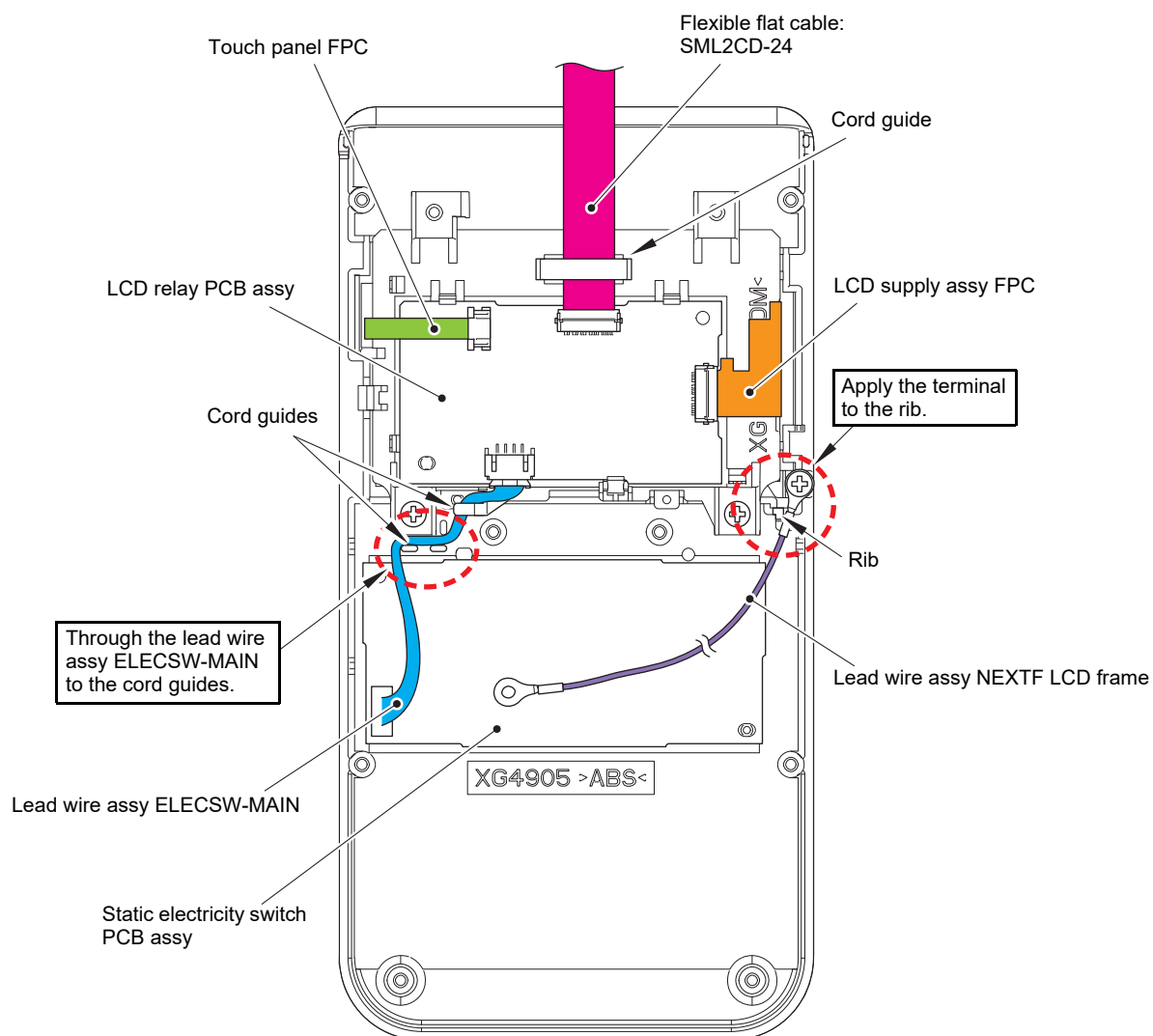
Lead wires to be bound with band C:

- AT pulse motor lead wire (CN11)
- Lead wire Assy main-panel (CN12)

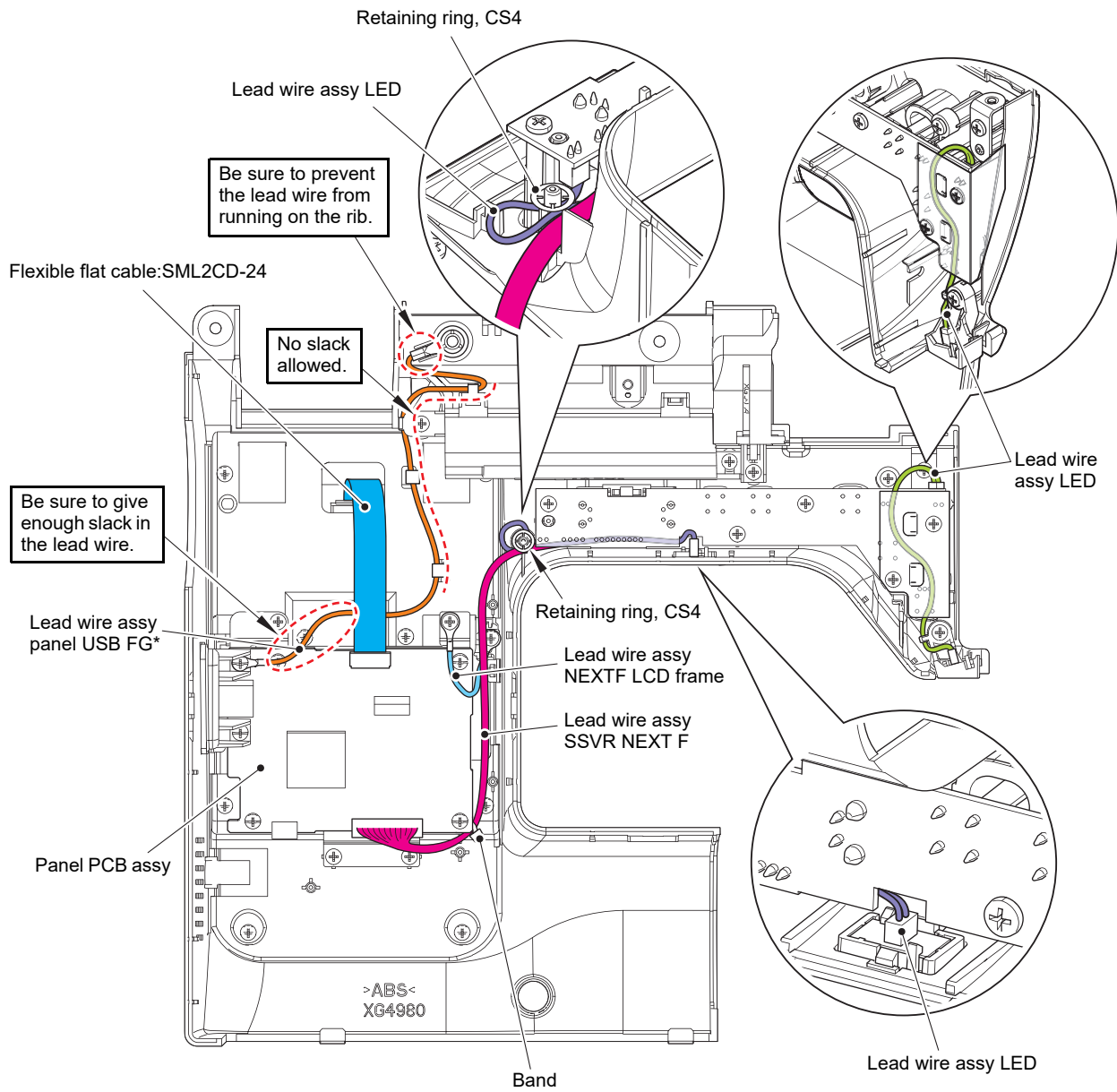
12. Lead wire assy main-panel



13.LCD unit

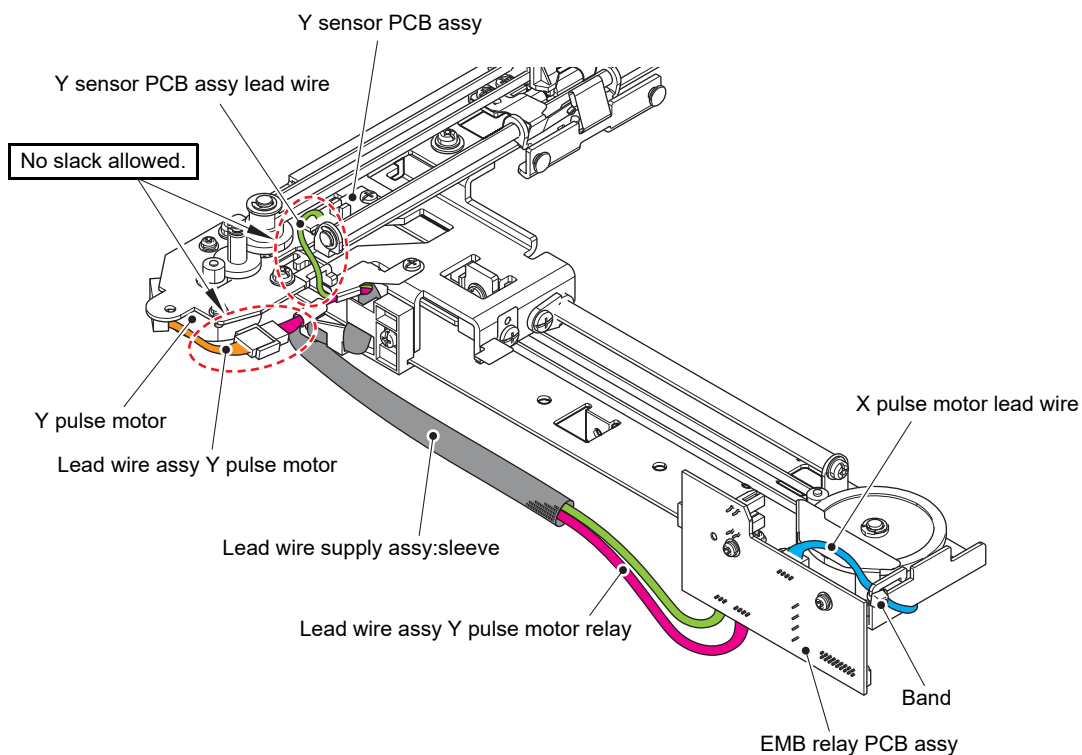


14.Front cover assy

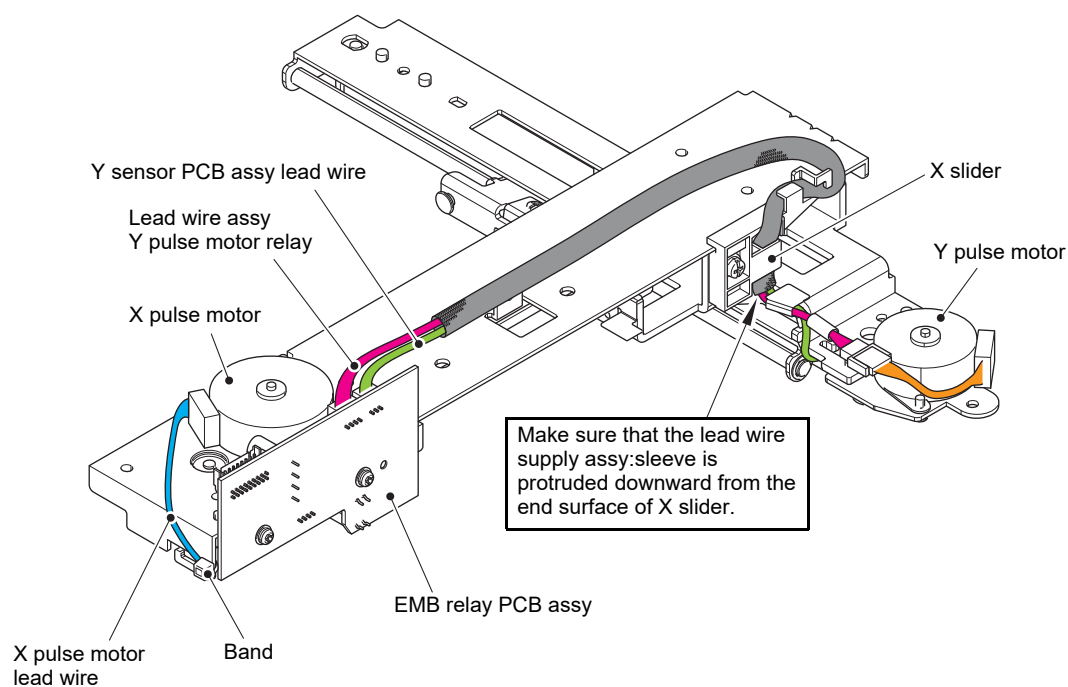


* Not equipped on some models.

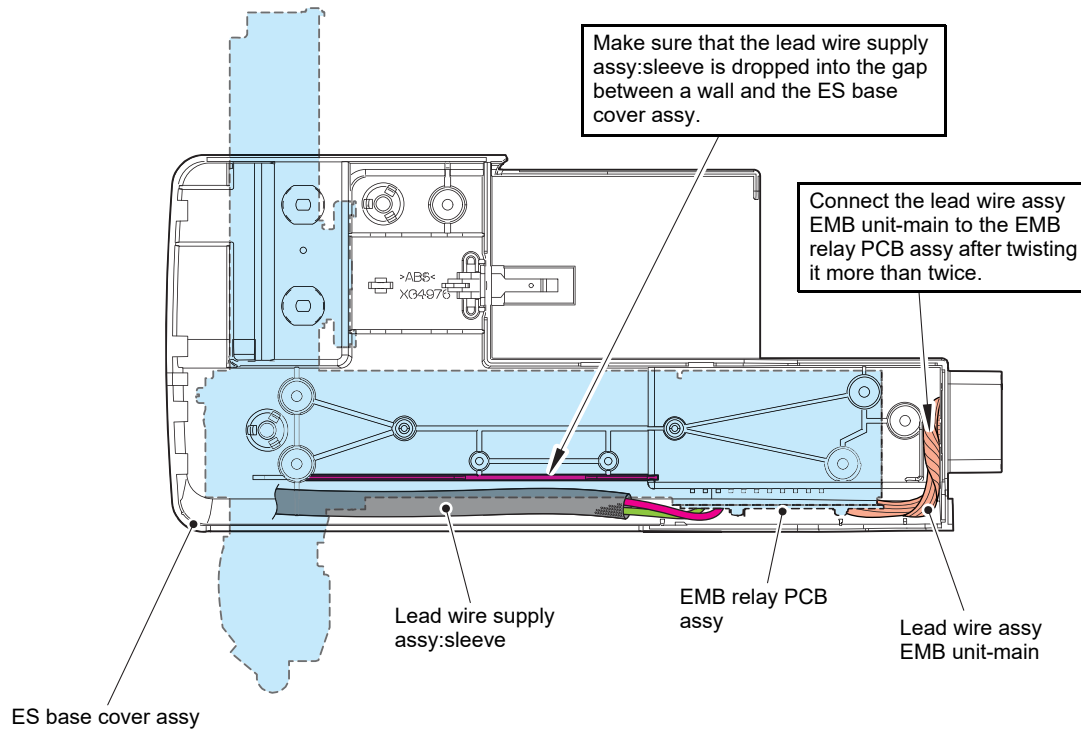
15.Embroidery unit (Top view)



16.Embroidery unit (Bottom view)



17. Lead wire supply assy:Sleeve



brother